

# DOES MEGAHERTZ MATTER?

Find Out What Really Makes Your Macintosh Fast, page 46

07.2001

# Macworld

## REWRITING THE iBOOK

**Hands On:** Apple's  
Smaller, Lighter,  
Low-Cost Laptop

### REVIEWED

#### Final Cut Pro 2

Apple's Video Editor Gets  
Blockbuster Update

#### iDVD

Bugs Hinder Free DVD Burner

#### CD-Burning Software

Get More from Your CD-RW Drive

#### G4 Upgrade Cards

Take Your G3 to the Next Level

## MAC OS X SECRETS

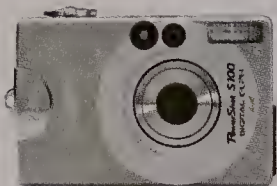
Go Inside Apple's  
Brand-New  
Operating System



# Your life.



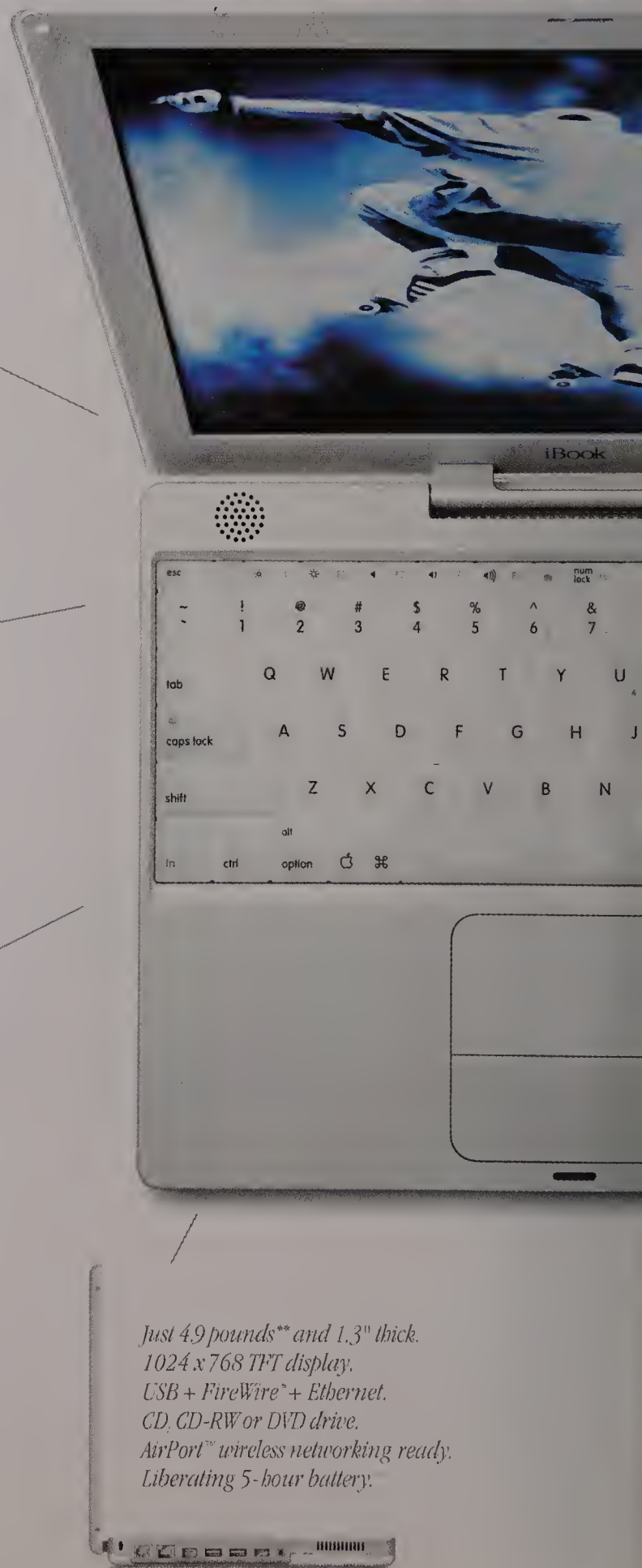
*Shoot video of whatever turns you on. Then use iMovie™ 2 (included) to edit out the boring stuff and create cool video effects like cross-dissolves and rolling credits. Add a killer soundtrack from your favorite CD and you're ready to share your movie with the world.*



*Imagine keeping thousands of photos neatly organized on your iBook™. Just plug your digital camera into one of iBook's USB ports, import your images and you've got a mobile photo studio. iBook's high-resolution display is a stunning way to show off your photos with friends and family.*



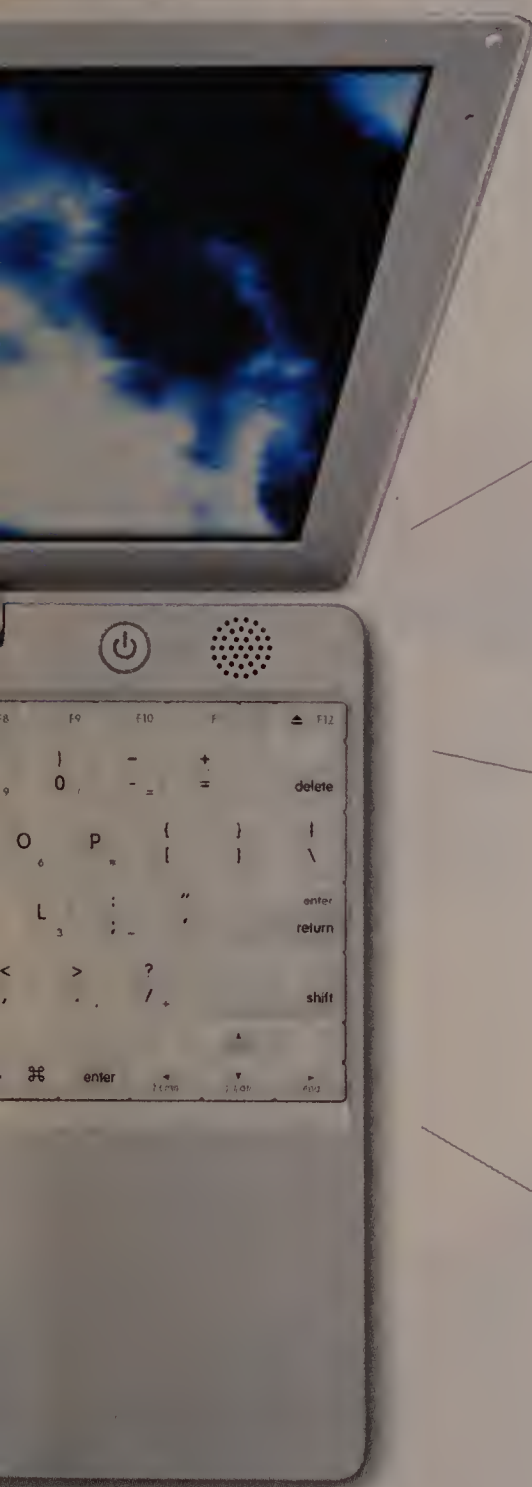
*The new iBook can even organize your organizer.\* Download updates on the road. Hot-sync in the air. Cross things off your "to do" list anywhere.*



*Just 4.9 pounds\*\* and 1.3" thick.  
1024 x 768 TFT display.  
USB + FireWire™ + Ethernet.  
CD, CD-RW or DVD drive.  
AirPort™ wireless networking ready.  
Liberating 5-hour battery.*



# To go.



*Add an AirPort Card and you can connect to the Internet at lightning speed—without wires—from the living room, the classroom or even the backyard or schoolyard through an optional AirPort Base Station up to 150 feet away.*



*With iTunes (included) you can rip MP3s from your favorite CDs and build an entire music library on your iBook. Then create custom playlists and play them on your iBook, download them to your MP3 player or even burn them on your own custom CDs.\**



*The new iBooks are a perfect match for Mac® OS X.® It's the most advanced, most easy to use and visually stunning operating system ever created. And you won't miss any of it on iBook's breathtaking 1024 x 768 TFT display.*

With iMovie, iTunes and iTools, the new iBook is designed to fit your life. Fortunately, it's priced so you can still afford to have one. Starting at \$1,299.\*



Think different.

■ With ordinary printers, you see her bathing suit is wet.

■ With our printers, you see her bathing suit is painted on.





YOU'VE GOT TO SEE IT IN **EPSON** COLOR.

It's true. The only thing she's wearing is her birthday suit. Take a closer peek at the laces and you'll see the work of an incredible artist. Brilliantly revealed by what could only be an Epson printer. One as adept at creating the boldest color as it is at capturing every brush stroke of detail. A talent that can take a greeting card, a school report or even a bathing suit and transform it into a masterpiece. Only Epson® has a full line of printers for any need – from everyday use to creating the most treasured photos. Plus, with Epson, you'll always get: Up to 2880 x 720 dpi for sharp black text and incredible detail • Award-winning Micro Piezo™ technology for a cleaner smaller droplet – as small as 3 picoliters • Fast print speeds – up to 13 PPM black/10.5 PPM color (with the Epson SC 980) • PC/Mac compatibility. And remember, only Epson supplies guarantee Epson quality. For more info, call 1-800-GO-EPSON or visit [epson.com](http://epson.com).

Epson Stylus Color  
Ink Jet Printers.  
Sheer brilliance  
starting at \$99.



## Opinion

### 8 The Vision Thing

ANDREW GORE Upgraded iBooks are part of Apple's evolving portable-Mac strategy.

### 14 Feedback

Readers respond.

### 43 The Game Room

PETER COHEN If you thirst for adventure games, read our take on *Escape from Monkey Island*.

### 136 Ihnatko

## Buzz

- 16 New iBooks, a 733MHz G4 processor takes on a 1.5GHz Pentium 4, Internet-filtering software, DVD-R isn't just for SuperDrives anymore, and musician Bryan Adams.

## How-to

### 62 Old Mac, New Tricks

### 68 Designing DVD Menus

ANTON LINECKER Learn how to make professional DVD menus in Adobe Photoshop and import them into Apple's powerful DVD Studio Pro.

### 72 Take Command of Mac OS X

STEPHAN SOMOGYI With a few basic commands in Mac OS X's Terminal application, you can leverage the power of Unix on your Mac.

### 76 Mac OS X Secrets

STEPHAN SOMOGYI Perl scripting is a powerful new possibility in Mac OS X.

### 78 Mac 911

CHRISTOPHER BREEN Mr. Breen solves the mysteries of disappearing disk space, using Disc Burner with a particular internal CD-RW burner, and printing via infrared.

July 2001

# Macworld

www.macworld.com

Incorporating MacUser



### Does MHz Matter?

JONATHAN SEFF Buying a Mac can be expensive, so you want to get exactly what you need. For example, which will do more to speed up Adobe Photoshop: added RAM or a faster processor? *Macworld* looks at a range of components to see which ones help performance in different areas of computing.

46



### Ihnatko

ANDY IHNATKO Yeah, the Palm is great and all—but Andy still pines for an Apple handheld.

136





## Inside the OS X Extras

The new operating system isn't all that comes on the Mac OS X disc. There's also a bundle of software, much of it brand-new. We explore significant features and unexpected uses of the best apps.

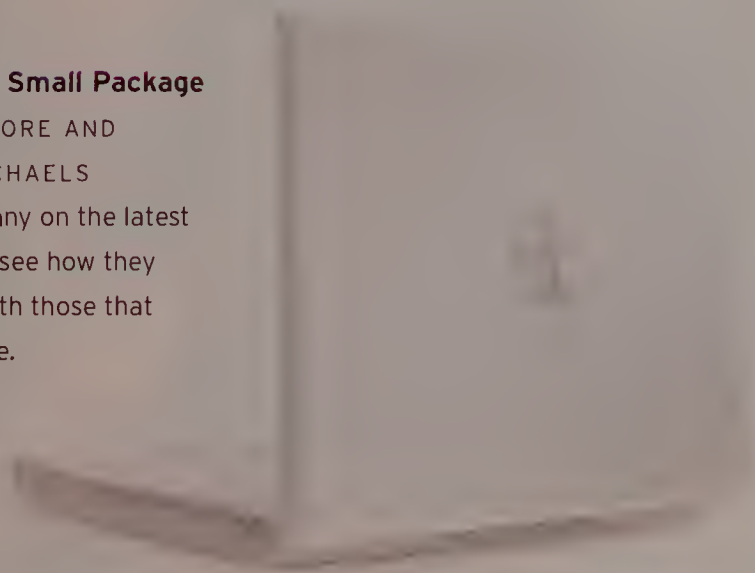
**56**

## Big Thing, Small Package

ANDREW GORE AND  
PHILIP MICHAELS

Get the skinny on the latest iBooks and see how they compare with those that came before.

**16**



## Old Mac, New Tricks

ADAM C. ENGST In the second part of our series, learn how to turn an older Mac into a Web server that can host everything from baby pictures to a moneymaking site for your business.

**62**

## On the Cover

Photograph by Stan Musilek

## Macworld.com

Learn how to use an older Mac as a kitchen assistant, participate in our lively forums, and read reviews you won't find anywhere else.

# Reviews

## 28 Video-editing software

★★★★ Final Cut Pro 2

## 30 G4 processor upgrades

★★★★½ Sonnet Technologies  
Encore ZIF G4 400MHz

★★★★½ XLR8 Mach Speed G4  
ZIF MPe 400MHz

★★★ PowerLogix PowerForce  
ZIF G4 450MHz

★★★★½ XLR8 Mach Speed G4  
ZIF MPe 450MHz

★★★★ Sonnet Technologies Encore  
ZIF G4 500MHz

★★★★½ XLR8 Mach Speed G4  
ZIF MPe 500MHz

## 32 CD-burning software

★★★ Discrite 4.0

★★★★½ Toast 5 Titanium

## 34 DVD-authoring software

★★½ iDVD 1.0

## 35 Calculation software

★★★★ CalculationCenter

## 36 Soundtrack-creation software

★★★★ SmartSound Sonicfire Pro 2.0

## 38 Firewall

★★★★½ NetBarrier 2.0

## 39 Text organizer

★★½ Boswell 1.0

## 40 Statistics software

★★★★½ Stata 7.0

## 41 Portable MP3 player

★★★ Lyra2

## 41 Game

★★ 2-Minute Drill

## 41 Product updates

Courtesy of VersionTracker.com

## 42 More reviews online

Macworld.com Reviews







**OLYMPUS**  
Focus On Life

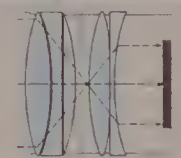
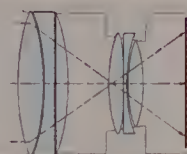
## THE BEST MOMENTS OF INSPIRATION WILL LEAD TO OTHERS.

The digital CAMEDIA E-10. The latest in a long series of inspirations. What happens when you're not satisfied with doing things the way they've always been done? In our case, it led to a camera designed specifically for the most demanding digital photography.



Exclusive Olympus TruePic™ technology smooths pixels for beautiful, continuous tone color.

It began with a 4 million pixel CCD. To take full advantage of such small pixels, the E-10 lens had to have a resolution three times better than that of a 35mm lens. It



Film lenses refract light at an angle. The CAMEDIA lens refracts light directly into the pixel wells, filling them with information fully.



The all-in-one lens seals out dust that can block pixel wells.

We ended up with an ultra high-resolution lens that's perfectly matched to the CCD, and permanently and rigidly attached to the body to maintain critical tolerances.

It's the CAMEDIA all-in-one lens. And it's the heart of what makes the digital E-10 SLR so special.

See it at your Olympus dealer. Let it inspire you to see pictures in a new way. Then go be an inspiration to others.

**CAMEDIA**®



With all the controls right where your fingers expect them, the CAMEDIA E-10 SLR is designed to make every shot instinctive.

Photographer: David LaChapelle

Lens: 9mm (35mm equivalent) with 0.8x wide conversion lens for 7.2mm (28mm equivalent)

Exposure: Manual exposure (1/60), aperture f9.0, ISO 80, manual white balance 5500°K

Light: Studio strobes with beauty dish

For information on the CAMEDIA E-10, visit <http://e-10.olympus.com> or call 1-888-55-DIGITAL.

**T**HE OTHER DAY, I LEARNED that *Fahrvergnügen*—the clever-sounding German slogan that Volkswagen has been using for years—is a real word, not just a creation of the folks who brought us the New Beetle. It means “driving pleasure,” and it refers to that elusive moment when driving a car is no longer about utility, but rather about the simple joy of driving. A vehicle with *Fahrvergnügen* is a pleasure to drive, even when you have no place to go.

With the introduction of the new iBook (see “Big Thing, Small Package,” *Buzz*, in this issue), Apple now dominates the portable-computer world in terms of price, performance and engineering. But even more important, Apple has cornered the market in *Fahrvergnügen*. Whether it’s one of these new iBooks or the Titanium PowerBook G4, using a Mac portable is a pleasure that transcends getting the job done. Sure, most of the things I do on an iBook or Titanium PowerBook I could accomplish on a PC portable, but I wouldn’t enjoy doing them nearly as much. That enjoyment has a real payoff: I’m using my portable more; and I’m also finding more ways to be productive with it.

This is why the popularity of portable Macs, measured as a percentage of all Macs sold, has tripled in the past year. And it’s why I believe the day is coming when portables will be Apple’s primary method of recruiting PC users to join the ranks of the Mac faithful.

### Formula for Innovation

Innovation happens when you combine need, opportunity, and—for lack of a better term—the willingness to “think different.” It’s always been vital to innovate in the design and construction of portable computers, much more than with desktop PCs. And when it comes to personal computers, none are more personal than the portable. A desktop machine challenges you to work on its terms, but the portable begs to be your companion, to work where and when you want to. People who use

ANDREW GORE

# Experience iBookgrüven

*Apple’s Portables  
Succeed Because  
They’re Fun to Drive*



portable computers look first and foremost for flexibility, and that flexibility demands innovative designs and technology.

Case in point: On a desktop computer, AirPort wireless networking is a convenience, saving the owner the trouble of having to run wires all over the house or office. On a PowerBook or an iBook, AirPort is a declaration of independence. It enhances flexibility, because it ensures that you can connect wherever and whenever you need to.

Portables need to be more rugged than desktops. They need to be smaller, which requires greater engineering finesse and more-expensive components. They need to

work under a wide variety of conditions, which means they must have their own reliable source of power and an array of networking options, from modems to Ethernet. They even need to be able to handle assorted power sources, in places from the United States to Uganda, because a road warrior never knows where the road will lead next.

### Design Rules

A key difference in the way Apple engineers a portable, in contrast to most PC companies, is that

at Apple, technology doesn’t drive design. Apple waits until current technology can serve its design goals. And when the technology is finally ready, Apple seizes the opportunity to fulfill plans it has been making, in some cases, for years.

This approach has sometimes left us Mac portable users feeling a little left out. For the past couple of years, we’ve watched Sony Vaio users get tiny, lightweight notebooks while we die-hard Mac fans had to lug around our luxurious-yet-large PowerBooks and iBooks.

All for one simple reason: Apple refused to ship a computer with anything less than a complete set of ports and capabilities, such as a DVD-ROM drive. And that meant no light, tiny, gorgeous Apple subnotebooks were in the offing.

So Apple waited. And we waited.



## Apple's Innovation

When at last available technology allowed Apple to fulfill its design goals, the final part of the formula for producing a great portable computer came into play: innovation.

In the portable-computer world, innovation means more than delivering small, light, full-featured computers that are as much like desktop machines as possible. If that were all that mattered, we'd all be using Dells. No, there's also the gestalt of all those components—in the end, a computer should add up to more than the sum of its parts.

## Different Beasts

Apple doesn't design a high-end laptop and then tear features off of it to make a consumer model. Nor does it build a cheap portable and then graft on extra features in order to market it to professionals. Instead, Apple chooses an audience, figures out what that audience requires, and then designs the best computer it can for that audience. That's why the iBook and the PowerBook G4, for all their similarities, are different beasts: they're meant for different audiences.

And because they're so different, they appeal to people with different needs. I already know a handful of Titanium PowerBook G4 owners who plan to buy iBooks to use as rough-and-ready portables in situations where compactness and toughness trump screen space and performance.

And let's not forget that a key part of innovation is realizing how even small touches can radically improve the quality of a product. Batteries should slip in and out easily, and they should have power-level indicators you can see from the outside of the machine. The power button should be visible, without making you hunt for it on the back edge of the computer. Ports should be located in logical places, clearly labeled, and easy to access.

In other words, function should inform design.

Finally, because a portable is meant to be handled, the way it

feels in your hands should be just as compelling as its spec sheet and its price tag. The new PowerBooks and iBooks want to be touched, and touching them is a pleasure. That's a good thing, because they'll get touched a lot during daily use.

## Toasting the Competition

All these elements combine to create the computer industry's only portables with Fahrvergnügen. The new iBook in particular is a amazing, because it offers driving pleasure in a portable that is also inexpensive. Nothing enhances driving pleasure more than using a machine that feels cool, fast, and expensive—but actually costs much less than you'd expect for such an advanced piece of engineering.

For me, I get the ultimate reality check on these products by gauging the reaction of entrenched PC users I know. And they lust for Apple's new portables. Since the PowerBook G4's introduction, I've seen it seduce at least one PC-using friend of mine who'll never go back to the dark side. And in Macworld.com's forums, I've read countless testimonials from other PC users who also made the switch to the Mac—all thanks to the Titanium PowerBook G4.

It will be interesting to see whether the latest iBook will have the same effect. Because its cost is so low, I predict that even more PC users will become iBook users. The only question is, will the overall experience of owning an iBook be appealing enough to draw them to the Mac for good?

I plan to test my theory on yet another friend who is a longtime PC user and clearly a member of the iBook's target audience. Once we get a cool new iBook in her hands, we can judge the power of iBookgrüven—as it brings her driving pleasure, Macintosh style. **m**

ANDREW GORE is *Macworld's* editor in chief. To comment on this column, type **Vision Thing** in the Search box at Macworld.com.

# Macworld

VP OF CONTENT/EDITOR IN CHIEF	Andrew Gore
EDITOR	Jason Snell
EXECUTIVE EDITOR	Schole Sawyer McFarland
EXECUTIVE EDITOR, MACWORLD.COM	Lisa Schmeiser
SENIOR EDITOR, BUZZ AND NEWS	Philip Michaels
SENIOR EDITOR, HOW-TO	Terri Stone
SENIOR EDITORS, REVIEWS	Linda Comer, David Weiss
ASSOCIATE EDITORS	Lotus Abrams, Jennifer Berger, Mathew Honan, Kelly Lunsford, Jonathan Seff
ASSISTANT EDITOR	Adrienne Robillard
EDITORIAL ASSISTANT	Bonnie Huie

## CONTRIBUTING EDITORS

Henry Bortman, Christopher Breen, Adam C. Engst, Bruce Fraser, Jim Heid, Andy Ihnatko, Ted Landau, Deke McClelland, Tom Negrino, Nancy Peterson, David Pogue, Stephan Somogyi, Franklin N. Tessler

## LAB

DIRECTOR OF PRODUCT EVALUATION	Kristina De Nike
TEST MANAGER	James Galbraith
SENIOR LAB ANALYST	Jeffy K. Milstead
ASSOCIATE TECHNICAL ANALYSTS	Ulyssis Bravo, Jason Cox, Brett Larson

## COPY EDIT

MANAGING EDITOR	Jennifer Werner
ASSISTANT MANAGING EDITOR	Charles Purdy
COPY EDITORS	Diane Ollis, Sue Voelkel

## ART AND DESIGN

DESIGN DIRECTOR	Sharon Anderson
ART DIRECTOR	Marlene Sezni
ASSOCIATE DESIGNER	Jackie Goodman
DESIGN ASSOCIATES	Amy Conger, Alissa Mach
PREPRESS CONSULTANT	Stephen Sugg
CONTRIBUTING DESIGNER	Jennifer Steele

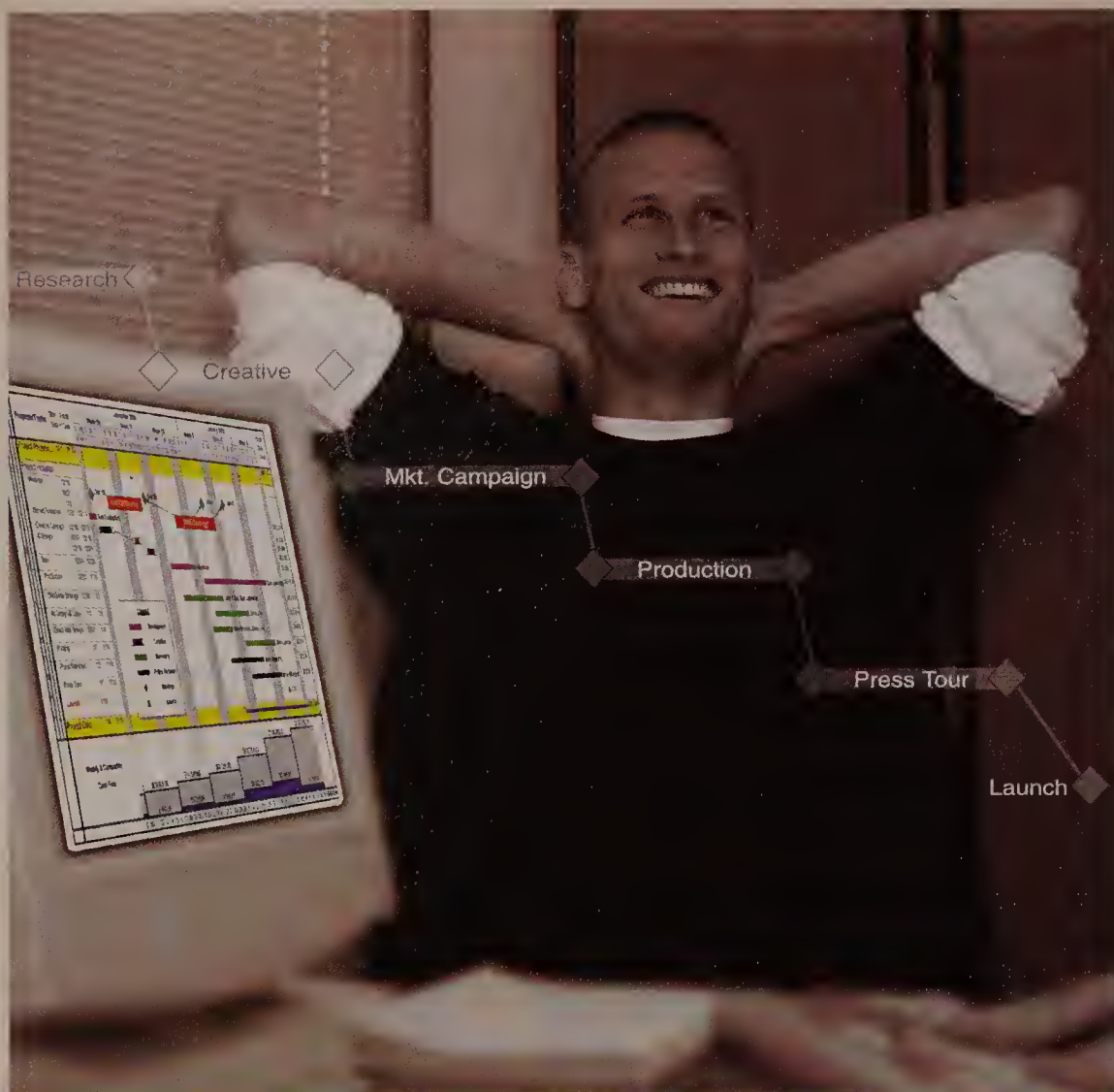
## MACWORLDPRICEFINDER.COM

ASSISTANT PRODUCER	Cathy Begien
--------------------	--------------

## INTERNATIONAL EDITORS

Steven Noble, Australia; Bernard Le Du, France; Andreas Borchert, Germany; Enrico Lotti, Italy; Yoshio Moriya, Japan; Tomasz Bitner, Poland; Daniel de Blas, Spain; Nils Holmlöv, Sweden; Anderson Huang, Taiwan; Bahattin Apak, Turkey; Simon Jary, United Kingdom





## One incredibly successful project manager.

What does this guy know about managing a project that you don't? He knows that with FastTrack Schedule 7.0, it's a snap to organize, track and manage all his project details. In minutes, project plans come to life in rich, colorful schedules that are sure to turn heads and get results.

Whether you have a day's worth of tasks or a yearlong project, FastTrack Schedule's three distinct views display your information the way you want—as a schedule, a calendar, or as a resource graph that tracks the people, equipment, and materials essential to project success.

And with our new compatible Palm OS version of FastTrack Schedule, you can sync schedules between your desktop and handheld. So even when you're on the go, your schedules are right at your fingertips for easy viewing and editing. For a free demo version or to order, call us today at 800.450.1982 or visit [www.aecsoft.com](http://www.aecsoft.com).

*Easily the best in Project Scheduling!*



**Details**

**FastTrack**  
for Palm OS  
**Schedule**

**FastTrack**  
Version 7  
**Schedule**



# Macworld

**PRESIDENT AND CEO** Colin Crawford  
**VP/CHIEF OPERATING OFFICER** Stephen Daniels  
**DIRECTOR OF FINANCE** Eos de Feminis  
**ACCOUNTING COORDINATOR** Ronda Bittner  
**BILLING MANAGER** Ricardo Sandoval  
**VP OF HUMAN RESOURCES** Sue Murphy  
**HUMAN RESOURCE MANAGER** Su-Tsen Wu  
**CHIEF INFORMATION OFFICER** Lynn Heiberger  
**NETWORK SERVICES MANAGER** Sean Greathouse  
**IT MANAGER** Jennifer Torres  
**IT SPECIALIST** Jose "Peps" Jara

## DISPLAY ADVERTISING SALES

**VP OF SALES/PUBLISHER** Steve Plevin (415/243-3509)  
**ASSOCIATE PUBLISHER, EAST** Cynthia Ramsey (973/243-1197)  
**SALES BUSINESS MANAGER** Gabrielle Lindsley (415/243-3578)  
**SALES & MARKETING COORDINATOR** Kasey MacMullen (415/243-3642)  
**NATIONAL ACCOUNTS MANAGER** Paul Bonarrigo (508/533-4020)  
**ACCOUNT EXECUTIVE** Jo Zottarelli (516/277-4134)  
**NATIONAL ACCOUNTS MANAGER** Sara Culley (831/475-0565)  
**ACCOUNT EXECUTIVE** Margaret Level Green (415/243-3582)  
**REGIONAL ACCOUNTS MANAGER** Coretta Wright (415/243-3615)  
**ACCOUNT EXECUTIVE** Michelle Davis (415/243-3577)  
**SALES ASSISTANT** Jim DeCleene (415/243-3662)  
**SALES ASSISTANT** Janecke Hausken (415/243-3583)  
**SHOWCASE ACCOUNT MANAGER** Niki Stranz (415/243-3664)  
**SHOWCASE ACCOUNT MANAGER** Carol Johnstone (415/243-3691)  
**SHOWCASE SALES ASSISTANT** Franck Zamora (415/243-3628)  
**ONLINE SALES MANAGER** Doug Detlefsen (415/243-3598)

## MARKETING

**DIRECTOR OF MARKETING** Hilary Weber  
**MARKETING COMMUNICATIONS MANAGER** Sharon L. Cordesse  
**MARKETING SERVICES MANAGER** Joanna Bock Colombo  
**MARKETING INTERN** Jae Kim

## PRODUCTION

**PRODUCTION DIRECTOR** Steve Spingola  
**PREPRESS MANAGER** Alan Anzalone  
**AO COORDINATOR** Megan Matteoni

## ONLINE

**SENIOR TECHNOLOGY DIRECTOR** Paul Forrester  
**SENIOR WEB PRODUCER** Christina Gonzales  
**ONLINE PRODUCTION MANAGER** Ron Neal  
**WEB PRODUCTION ASSISTANT** Margaret Perez

Macworld is a publication of Mac Publishing, L.L.C. Macworld is an independent journal not affiliated with Apple Computer, Inc. Macworld, MacUser, MacWeek, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, The Desktop Critic, Expert Graphics, Quick Tips, Star Ratings, Buyers' Tools, Streetwise Shopper, and Conspicuous Consumer are registered trademarks of Mac Publishing, L.L.C. Apple, the Apple logo, Mac, and Macintosh are registered trademarks, and MacLetter and PowerBook are trademarks, of Apple Computer, Inc. Printed in the United States of America. Copyright © 2001 Mac Publishing, L.L.C. All rights reserved.

Circle 84 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



# ASPIRE.

NEC

I let you do more.

See images more clearly.

Visualize in endless new ways.

Create in vivid color, with flat-screen precision.

I'm your monitor.

I help you turn your ideas into reality.



#### The all-new NEC MultiSync® FP Series™.

Superb resolution and unrivaled detail. Edge-to-edge clarity, with virtually no distortion. Glare-free viewing. True-to-life color. Larger viewing areas for more versatility. They're all part of the flat-aperture grille advantage.

All models feature dual system input capability. Select models feature Ambix™, the dual digital and analog technology that delivers added compatibility. With stellar performance and pricing, it's no surprise our MultiSync FPs are the monitors of choice for people who take their precision seriously.

Only from NEC-Mitsubishi, the combined force of the two leaders in visual display technology.

#### SEE MORE.

For more information or to buy online, go to [www.necfp.com](http://www.necfp.com).

#### MultiSync® FP Series

#### Screen/Viewable Size

#### Max Resolution

#### Grille Pitch

FP955

FP1355

FP1375X

19"/18"

22"/20"

22"/20"

1920 x 1440 @ 73 Hz

2048 x 1536 @ 75 Hz

2048 x 1536 @ 80 Hz (analog)  
1600 x 1200 @ 60 Hz (digital)

0.24mm

0.24mm

0.24mm

MultiSync is a registered trademark. Ambix and FP Series are trademarks of NEC-Mitsubishi. Simulated image in monitor.  
©2001 NEC-Mitsubishi Electronics Display of America, Inc. All rights reserved.

**NEC / MITSUBISHI**  
NEC-MITSUBISHI ELECTRONICS DISPLAY

Circle 20 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

## SmartDisk's NEW VST Portable FireWire™ CD-R/W goes anywhere you go

You don't even need an AC adapter because it's powered by your computer's FireWire bus.

The VST FireWire CD-R/W is perfect for storing and sharing all the things you love: music, photos, movies, and much more. Whatever your passion, SmartDisk has the solutions you need to get there -- fast.

With SmartDisk's award-winning VST line of products, you've got the reliability and speed to do what you want, where you want.

So burn on over to [www.smartdisk.com](http://www.smartdisk.com) and see more products that simplify your digital lifestyle.



Ultra-Thin FireWire™  
and FireWire/USB  
Hard Drives



Full Height FireWire™ Hard  
Drives and Zip®250 Drives



VST FireRAID™ Software

**SMARTDISK**  
Simplifying The Digital Lifestyle™

Circle 74 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

# Macworld

## HOW TO CONTACT MACWORLD

### Subscription Information and Services

Phone	800/288-6848 or 850/682-7624, from the United States and Canada 303/604-7445, from all other locations
U.S. Mail	Macworld Subscription Services P.O. Box 54529, Boulder, CO 80322-4529 (Include a mailing label with correspondence.)
World Wide Web	<a href="http://service.macworld.com">http://service.macworld.com</a> (for service) or <a href="http://subscribe.macworld.com">http://subscribe.macworld.com</a> (to order)
E-mail	<a href="mailto:macworld@neodata.com">macworld@neodata.com</a> (Send your full name and the address at which you subscribe; do not send attach- ments.)
Fax	850/683-4094, from the United States and Canada 303/604-0518, from all other locations

### Subscriptions

The one-year (12-issue) subscription rate is \$34.97 in the United States and \$54.97 for all other countries. The rate for a one-year (12-issue) subscription with the monthly CD-ROM is \$54.97 in the United States and \$74.97 for all other countries. Checks must be made payable in U.S. currency to *Macworld*. Please allow 3 to 6 weeks to receive your first issue or for changes to be made to an existing subscription.

### Back Issues of Macworld

Back issues (subject to availability) are \$8 per issue for U.S. delivery (\$12 outside the United States); prepayment in U.S. currency to *Macworld* is required. Send check or money order to Back Issues, *Macworld*, P.O. Box 53131, Boulder, CO 80322-3131.

### Reprints and Permissions

You must have permission before reproducing any material from *Macworld*. Write to *Macworld*, Reprints and Permissions, 301 Howard St., 16th Fl., San Francisco, CA 94105; include a phone number. To order reprints of your company's editorial coverage, call Reprint Management Services at 717/399-1900; fax 717/399-8900; e-mail [sales@rmsreprints.com](mailto:sales@rmsreprints.com).

### Mailing Lists

We periodically make lists of our customers available to mailers of goods and services that may interest you. If you do not wish to receive such mailings, please write to us at *Macworld*, P.O. Box 54529, Boulder, CO 80322-4529. Please include a copy of your mailing label.

### Macworld on Microfilm

*Macworld* is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 734/761-4700.

### Macworld Editorial

The editors of *Macworld* welcome your tips, compliments, or complaints. Stories and product reviews from past issues can be located at [www.macworld.com](http://www.macworld.com). We are unfortunately unable to look up stories from past issues; recommend products; or diagnose your Macintosh problems by phone, e-mail, or fax. Contact Apple toll-free at 800/538-9696, ext. 500, for information on user groups in your area.

Our offices are located at 301 Howard St., 16th Fl., San Francisco, CA 94105; phone, 415/243-0505; fax, 415/442-0766.

**LETTERS TO THE EDITOR** Direct all comments and suggestions regarding any aspect of the magazine to [letters@macworld.com](mailto:letters@macworld.com). Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all submissions. All letters published in *Macworld* or *Macworld.com* become the property of Mac Publishing.

**MAC 911** Send your questions or tips on how to use Mac computers, peripherals, or software to *Macworld*, *Mac 911*, 301 Howard Street, 16th Floor, San Francisco, CA 94105; fax 415/442-0766; or e-mail [mac911@macworld.com](mailto:mac911@macworld.com). Please include your name, address, and telephone number. To share tips and discuss Mac problems with other Mac users, visit the Mac 911 forum ([www.macworld.com/subject/mac911](http://www.macworld.com/subject/mac911)).

**MACWORLD EXPO** As the flagship sponsor of Macworld Conference and Expo, *Macworld* encourages all subscribers to attend this exciting biannual industry event. For more information about registration, exhibitor lists, conference schedules, dates, and much more, please visit [www.macworldexpo.com](http://www.macworldexpo.com).





# APC introduces the best protection available for your Mac.

## 8 million computer users can't be wrong about APC power protection

Don't let a lightning storm destroy your Mac system in the blink of an eye. Your hard drive, modem and RAM are all at risk, not to mention peripherals like your zip drive, scanner, monitor and printer. Rely on an APC Back-UPS Pro® to save your investments from high voltage surges.

APC power protection also provides clean, continuous power that lets you function without frustrating interruptions, unlike cheap power strips that don't prevent any of the power problems that can cause keyboard lock-ups, systems crashes, and lost Internet connections. And if your system is ever damaged by a surge, even lightning, APC's Lifetime Equipment Protection Policy will pay up to \$25,000 to replace your equipment.

\* (see policy for details)

Discover why 8,000,000 customers trust in APC's Legendary Reliability and protect your Mac system with an APC power protection unit today.



### An APC Back-UPS Pro 500 USB provides:

- Emergency battery power for continuous uptime to help save your data through brief power outages
- Auto-shutdown software that saves your files and data, even when you're away from your computer
- Audible and visible alarms alert you to power events as they occur
- \$25,000 Equipment Protection guarantee
- 2 year comprehensive warranty
- iMac colored configurable speaker guards to match your computing environment



APC Back-UPS Pro® 500:  
"APC's latest plugs into a USB port, making it completely painless to protect your PC from power snafus and electrical spikes."  
- PC Computing 4/99



**APC**  
Legendary Reliability™



## Enter to win a clear APC Back-UPS Pro® 500 for your Mac!

Enter to win APC's legendary power protection for your Mac, a \$179.99 value! All entrants will also receive an "Are You at Risk" Kit. (See APC's Web site for complete promotion details)

Enter now: Visit <http://promo.apc.com> Key Code z744z • Call 888-289-APCC x4021 • Fax 401-788-2797

©2001 American Power Conversion. All Trademarks are the property of their owners. APC1D0EF-USA • PowerFax: (800)347-FAXX • E-mail: [apcinfo@apcc.com](mailto:apcinfo@apcc.com) • 132 Fairgrounds Rd., West Kingston, RI 02892 USA

# Feedback



## Tax Shaft

Thanks to the Internal Revenue Service, April most definitely is the cruelest month. So it's no surprise that most of the mail we received about April's *Macworld* was from unhappy taxpayers who were concerned about our review of tax-preparation software (*Reviews*, April 2001).


H&R Block Financial's Kiplinger Tax-Cut Deluxe claims to allow a user to e-file both federal and state tax returns (in 26 states). But the program will not allow you to do this if you've received income reported on a 1099-Misc form, as independent contractors do. In addition, the state edition overlooks 1099-Misc income when calculating gross income. It totals only income reported on W2 forms.

GARY SCHAUB, JR.  
Pittsburgh, Pennsylvania

I have a PowerPC with a G3 upgrade running OS 8.5.1. According to the system requirements on TaxCut's box, the program runs on 68030 and faster processors, and System 7.5.3 and higher. But I had to upgrade to OS 8.6, at significant time and expense, just to get TaxCut to work.

I also discovered that the downloadable free state-tax software was not available for my state in mid-February, and the company's claim that the software was able to seamlessly download last year's TurboTax information and carryovers was untrue. TaxCut does *not* recognize TurboTax files.

I e-mailed tech support—identifying my problems and asking for assistance—and waited five days for a response before calling. After holding (at my expense) for 50 minutes, I got a tech-support representative who knew nothing about the Mac.

Giving this program a  rating was misleading.

CHUCK MILLER  
Cincinnati, Ohio

### Apple's Audio Blues

Regarding your review of Apple's new Power Mac G4 lineup (*Reviews*, April 2001): something's missing! What is wrong with Apple? At a time when everyone is playing with music files, recording their LPs, and making MP3s, it removes the audio-input feature from its entire professional product line? This has prevented me from buying an iBook and now makes me look at alternatives for the desktop, too.

DONALD SAMSON  
Chicopee, Massachusetts

Your review of the 466MHz and 533MHz Power Mac G4s was right on the mark. I just purchased a dual-

processor 533MHz model. Like Mr. Breen, I was unhappy to see no audio-in port. It was apparently replaced with a digital audio-out port, which many of us with great legacy speaker systems will never use.

JEFF WAGGONER  
Hinsdale, Illinois

### Working Blind

Galen Gruman's monitor review (*Reviews*, April 2001) has some useful information but makes no reference to some important aspects of a good monitor. It would've been helpful if the author had included information about gray-scale accuracy, color-temperature accuracy, and chromaticity coordinates for the three primary-color phosphors. Without this information, a true image professional may as well be working blind.

DAVE CORBITT  
Madison, New Jersey

### Free Doesn't Cut It

I went to FreeSamples.com ("The Great Giveaway," April 2001), and the only things available for free were lollipops and Mrs. Dash. The



bank gives out free lollipops.

JAN SHARROW  
Atlanta, Georgia

### Mini Mouse, Big Oops

Contour Design's MiniPro Optical Mouse was recently reviewed on Macworld.com. In the review, some errors were made. The mouse *does* have software for customizing button functions. The MiniPro Optical Mouse software is designed to be downloaded from our Web site. Furthermore, the mouse has *two* buttons and no scroll wheel for ergonomic reasons. The MiniPro Optical Mouse is designed to be portable and go anywhere. It is too small to have side-by-side buttons or a scroll wheel.

YAISHALI PATEL  
Contour Design

*The review has been updated online, and our mouse rating has been adjusted accordingly.—Ed.*

### Big Brother Likes Dead Trees

Perhaps I missed it, but in James Bradbury's article "Quicken versus the Web" (April 2001), I didn't see any discussion about search and seizure laws as they relate to online bill-payment services. Last time I checked, the restrictions that apply

to Big Brother examining bills paid through snail mail do not apply to bills paid electronically. I would be happy to be proved wrong on this.

SCOTT STEVENSON  
Los Altos, California

*Without going into whether it's easier for the government to pry into bills paid online, I suggest never doing anything online that you want kept secret. Unless you're paying cash, though, you always leave an electronic trail.—James Bradbury*

### Viva MacPipes! Viva Ihnatko!

I just wanted to thank Andy Ihnatko for recommending the shareware game MacPipes (*The Game Room*, April 2001). When I was younger, I was addicted to a similar game. Unfortunately, it was on an old 66MHz computer. I'm glad someone found this game for me, and even better, I can play it on my iMac!

REBEKKA WENDELN  
West Carrollton, Ohio

### Encore

I thoroughly enjoyed your story about Macs on the big screen ("Great Performances," *Buzz*, April 2001). But there was a glaring omission: *Jurassic Park*. Who could forget smoking

Samuel L. Jackson and his Macs that ran the island? And Wayne Knight (*Seinfeld's* Newman) plotted the theft of dinosaur DNA and sabotaged the entire network with his Mac.

MATT BARNETT  
Fishers, Indiana

### Mark Up

I've been reading Andrew Gore's "PowerBook G4 Diary" (Macworld.com), and I wonder if the keyboard touching the screen is a problem for everyone. I was told that I was the first South American to have one of these mean 500MHz machines, but I don't want to be the first with a marked screen!

CARLOS SANTA CRUZ  
La Paz, Bolivia

*You can wipe the marks off easily with a soft cloth.—Ed. m*

Letters should be sent to Letters, *Macworld*, 301 Howard St., 16th Fl., San Francisco, CA 94105; via fax, 415/442-0766; or electronically, to letters@macworld.com. Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*.

## The Feedbag

Much of the mail we get here at *Macworld* has nothing at all to do with our little magazine. Sometimes, readers just want to ask us general questions, and we're always more than glad to answer. Which isn't to say that those answers will always be correct—but we'll try.

Dan and Jan want to know what to do with their six-foot-tall Lara Croft statue. "We are the proud owners of one of these models, and we would like to find out its value, with a view to selling. We know it's one of only 50 made."

Our advice? Don't sell it; instead, run out and buy the other 49. Corner the Croft market—that's 300 feet of Lara! If only Billy Bob Thornton were so lucky: all he has is that

financially worthless, live Angelina Jolie. And she's only, what, five feet and seven inches tall?

Meanwhile, Adam wants to know all about the ⌘ key. "I am wondering what the symbol on the Mac keyboard's command key is," he writes. "Does it have any significance or history? I am actually curious about getting it as a tattoo. Where could I get a better picture of it?"

You mean taking your iBook down to a tattoo parlor and saying "This key, please" won't cut it? Boy, today's tattoo artists are a fussy lot. Anyway, Adam, the history question has us completely stumped. We suspect, however, that Woz and Jobs swiped it from the cover of *Led Zeppelin IV*.

Of course, we've been wrong before.

FIRST LOOK

# The New iBook: BIG THING Small Package



BY ANDREW GORE AND PHILIP MICHAELS

## APPLE SACRIFICES SIZE, Not Strength, with Latest Portable Update

THE TITANIUM POWERBOOK G4 has been a big hit for Apple—in just four months, the company has sold more than 115,000 of the power-packed portables. Now it's time for Apple's other laptop to get the Titanium treatment. Meet the new iBook, a slimmer, sleeker, whiter version of the original introduced by Apple nearly two years ago.

This new iBook is all about size—or lack of it. It's 9.1 inches deep by 11.2 inches wide, meaning it's not much larger than a three-ring binder. Like the inch-thick PowerBook G4, the iBook has gotten slimmer; it's now just 1.3 inches thick. That's helped to drop the iBook's weight to 4.9 pounds.

But Apple didn't sacrifice functionality in slimming down the new iBook. This Mac is stocked with a 500MHz G3 processor, a full slate of ports (see "Ports Aplenty"), and a full-size keyboard. iBook buyers also get a choice of optical drives. The basic \$1,299 model comes with a 24×

CD-ROM drive and 64MB of installed RAM. An iBook equipped with 128MB of RAM and a DVD-ROM drive costs \$1,499; with 128MB of RAM and an 8×4×24× CD-RW drive, \$1,599; and with 128MB of RAM and a combination CD-RW/DVD-ROM drive, \$1,799.

### Outside and Inside

With this revision, Apple's recent penchant for sprucing up its machines with eye-catching colors appears to be receding quickly in the company's rearview mirror. The so-bright-it-glows shade of last fall's key lime iBook? It's gone, along with the original iBook's extrawide curves and spring-loaded handle.

The new model is almost the anti-iBook: a smooth, almost featureless white box with rounded edges and corners. Where the original design was sassy, this iBook is simple; while the old portable screamed for attention, this one merely whispers.

News,  
Views, and  
Chatter  
from the  
World  
of Macs



Instead of bright colors, the new iBook features an evolution of the computer-trapped-in-Lucite look of the Power Mac G4 Cube. The iBook is sheathed in a millimeters-thick clear plastic coating that is warm and grippable—and, on first examination, appears to be highly shock- and scratch-resistant. Around the middle is a band of metallic gray that ties the new iBook to the 2001 edition of Apple portables. Sitting next to a Titanium PowerBook, the iBook looks like it belongs, sharing such touches as the same magnetic catch and rounded metal release button on the front and a glowing crystal Apple logo.

Unlike the Titanium PowerBook, however, the iBook's shell does not contain any exotic metals. Its chassis consists primarily of polycarbonate plastic, stiffened by a magnesium frame. The drive is mounted in rubber, and the case has no external latches, doors, or hinges—except the primary hinge that connects the top and bottom of the clamshell case. And that hinge speaks to the iBook's resilience

## The iBook's New Chapter

PROCESSOR SPEED	BUILT-IN RAM	STORAGE	OPTICAL DRIVE	PRICE
500MHz G3	64MB	10GB	CD-ROM	\$1,299
500MHz G3	128MB	10GB	DVD-ROM	\$1,499
500MHz G3	128MB	10GB	CD-RW	\$1,599
500MHz G3	128MB	10GB	CD-RW/DVD-ROM combo	\$1,799

around the rubber feet on the bottom, to help protect the feet from being pulled off in a student's rough-and-tumble day.

### Checking Out the Specs

Apple didn't add a G4 processor when it revised the iBook. Still, the new-look laptop hardly lacks for power. All four configurations come with a 500MHz PowerPC G3 processor with 256K of Level 2 cache; however, the computer's system bus runs at 66MHz, still the slowest of all currently shipping Mac models. Besides the 64MB of RAM soldered to the basic model's logic board and the 128MB of soldered-on memory in the other configurations, the iBook

The iBook's screen has also gotten a boost. It's still a 12.1-inch active matrix display, but now it offers a resolution of 1,024 by 768 pixels, as opposed to the original iBook's 800 by 600. This means there are a lot of pixels on a comparatively small screen—and while the display is relatively sharp, it may be hard for some users to read. In 1,024-by-768 mode, type was a bit too small for one editor's nearsighted, just-short-of-40-year-old eyes. Of course, you can lower the screen's resolution to try to compensate, but because 1,024 by 768 pixels is the native resolution of the screen, all lower resolutions have to be created via *pixel interpolation*—small pixels emulating larger pixels—and the results can be blocky and fuzzy.

If you're looking for accelerated video power, this system will leave you wanting more. It has an ATI Rage Mobility 128 graphics controller and 8MB of graphics RAM—the same as the PowerBook G3 and G4. Unlike earlier models, however, this new iBook offers RGB-video out. This lets you use a special monitor cable adapter to drive an external monitor—which must mirror the contents of the iBook's built-in screen. As with the last generation of iBook, this model can output composite video as well, through a different adapter cable.

*continues*

Where the original design was sassy, this iBook is simple; while the old portable screamed for attention, this one gets noticed by merely whispering.

—the firm, thick hinge swings the screen back and down, behind the computer's back edge, which lowers its overall height when open.

According to Apple, the combination of all these design factors makes the new iBook twice as durable as the older model, even though it has less "shock space" inside the case. Apple has even added metal collars

allows for expanded RAM via a single PC100 RAM DIMM slot. The result? Your fully loaded iBook will have between 576MB and 640MB of RAM, depending on the model you buy. A 10GB Ultra ATA drive is standard on all models, although you can choose to have Apple install a 20GB internal drive (for an extra \$200) instead.

### PORTS APLENTY

10/100BaseT Ethernet

USB

Audio/Composite-Video Out





# iBooks Take Apple Back to Class

MACS AND SCHOOLS—the two go together like recess and kickball. And Apple hopes to keep it that way with help from the iBook.

Putting Macs in schools helped Apple make a name for itself in the early days of the company. That commitment hasn't gone away, but Apple no longer finds itself at the head of the class. PC maker Dell claimed the top spot in total education sales last year—a situation Apple has vowed to reverse. The company has brought in two new education executives and purchased PowerSchool, a Web-based student information system. And now Apple has added a redesigned iBook to its arsenal of products.

Looking at the numbers, it's easy to see why Apple is counting on the iBook to restore its leadership position in education. Even when Apple lost the overall top spot to Dell, it still sold more notebooks to schools and students than any other computer maker. And market research firm IDC says demand for notebooks grew 2.5 times faster than demand for desktop computers in 2000.

Apple believes that wirelessly networked notebooks such as the iBook are the future of computers in education. Presently, schools tie up classroom space by turning entire rooms into desk-

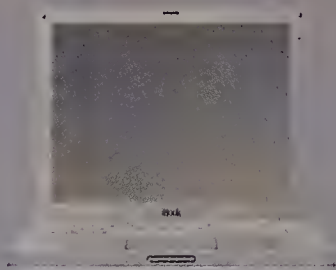
bound labs. To use the labs, students have to move from classroom to classroom—not exactly a recipe for productivity, Apple CEO Steve Jobs explained.

Instead, Apple envisions schools stocking up on laptops—AirPort-equipped iBooks, naturally—and moving the computers to each classroom via a mobile cart. “The computers move from room to room, not the students,” Jobs said.

It's fitting, then, that Apple's first customer for the new iBook is the Henrico County school district in Virginia. The district bought 23,000 iBooks, enough to give one to each of its middle- and high-school students and teachers this fall.

“We're going to take all these beautiful iBooks, put them in the hands of teachers and students, and change the world,” said Dr. Mark Edwards, Henrico County schools superintendent, when Apple announced the record sale.

That's music to Jobs's ears. “Apple has been helping teachers teach and students learn since 1977,” he said. And if the company's recent efforts are any indication, Apple has no plans to stop now.—PHILIP MICHAELS



As with previous models of the iBook, Apple claims you can run this model on battery power for five hours. The battery is still mounted in the bottom of the unit. But unlike the old power pack, the new battery is smaller and easier to remove: there's a single coin screw instead of two. A series of LEDs tells you at a glance how much charge the iBook has.

Upgradability seems to be a strong point: both the RAM and AirPort slots are easily accessible under the keyboard (adding an AirPort card to the PowerBook G4 requires removing the bottom cover).

And, just because Apple's industrial-design group likes to add little surprises to all its designs, the new

While the new iBook may not have all the muscle of a PowerBook, it certainly keeps pace, feature for feature.

iBook's sleep indicator light is on its front edge, embedded under the plastic skin and visible only when it cycles slowly from dim to bright.

### The Bottom Line

Portables are the fastest-growing segment of Apple's business—nearly 30 percent of the systems the company

has sold this year, versus just over 10 percent in 1999. It's easy to see why: as other companies threw features overboard to help reduce size or lower prices, Apple held out for the technology and the component prices to reach levels at which it could offer complete solutions in each niche. That's especially true in consumer portables. There, PC vendors knock off features from their high-end notebooks to get prices down. But Apple engineers the iBook with no compromises, and it shows. While the iBook may not have all the muscle of a PowerBook, it certainly keeps pace, feature for feature.

And that's good news for iBook users who are looking for a lot in a little package. **m**

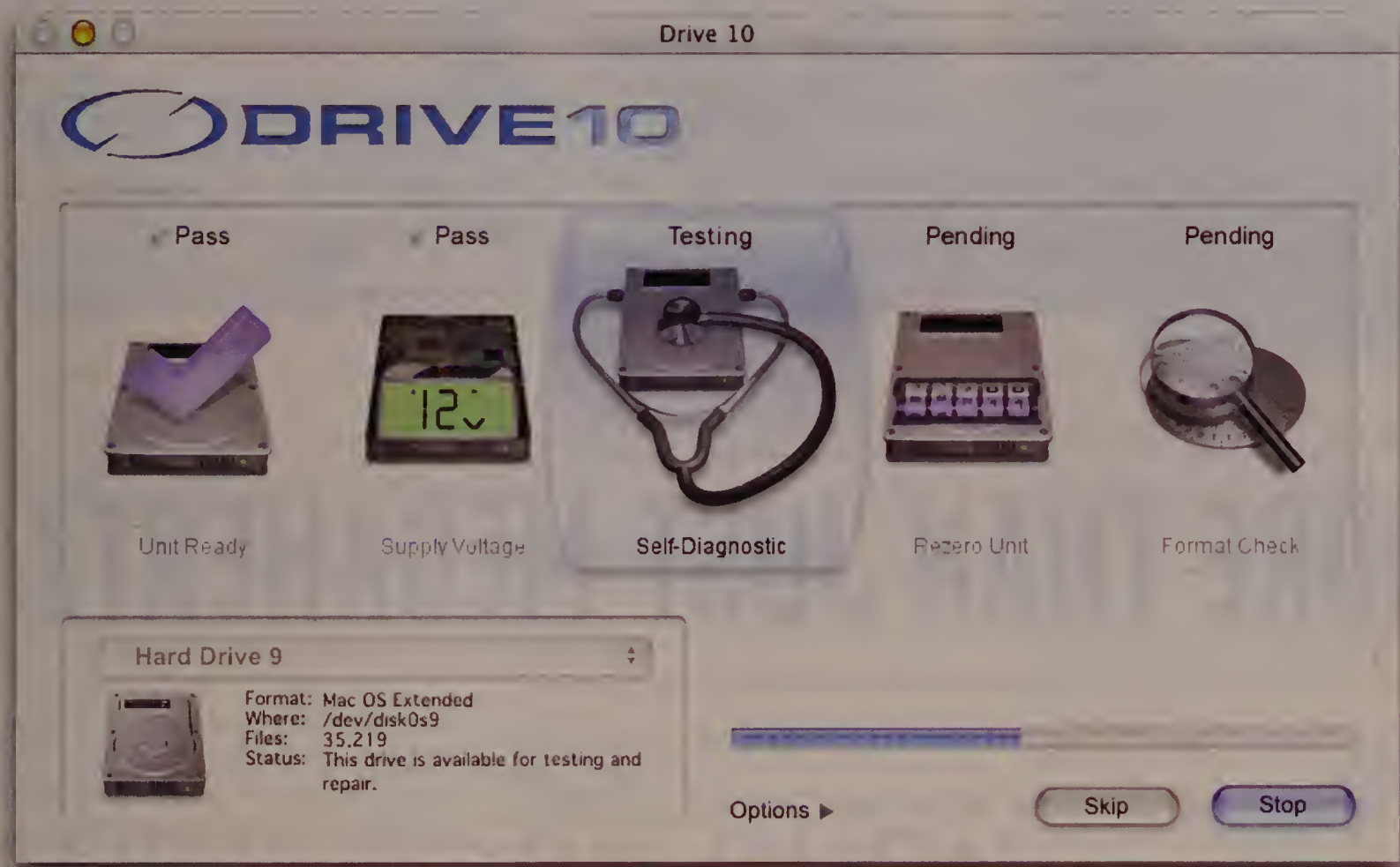
## iBooks: Then and Now

Here's how the iBook has evolved since Apple unveiled the laptop in 1999. Each example represents the highest-end iBook available at the time.

MODEL	PROCESSOR SPEED	BUILT-IN RAM	STORAGE	OPTICAL DRIVE	MAXIMUM RESOLUTION	VIDEO OUT	SIZE (IN INCHES)	WEIGHT
July 1999 iBook	300MHz G3	32MB	3GB	CD-ROM	800 × 600 pixels	No	13.5 × 11.6 × 1.8	6.7 pounds
February 2000 iBook SE	366MHz G3	64MB	6GB	CD-ROM	800 × 600 pixels	No	13.5 × 11.6 × 1.8	6.7 pounds
September 2000 iBook SE	466MHz G3	64MB	10GB	DVD-ROM	800 × 600 pixels	Yes (composite)	13.5 × 11.6 × 1.8	6.7 pounds
May 2001 iBook	500MHz G3	128MB	10GB	CD-RW/DVD-ROM combo	1,024 × 768 pixels	Yes (RGB and composite)	11.2 × 9.1 × 1.3	4.9 pounds

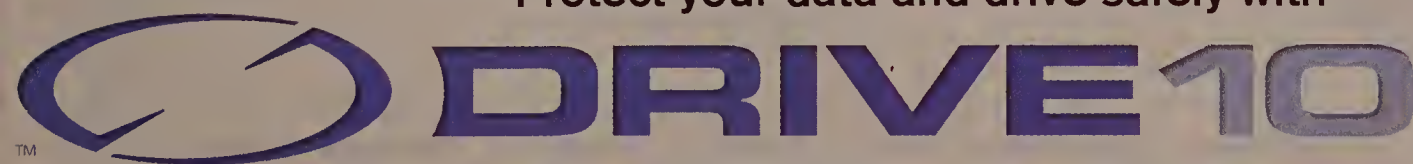


# Drive safely.



## The first and final disk utility for Mac OS X

Don't entrust your OS X drive to ancient utilities.  
Protect your data and drive safely with



From the creators of TechTool Pro®



Micromat Inc.

800-829-6227

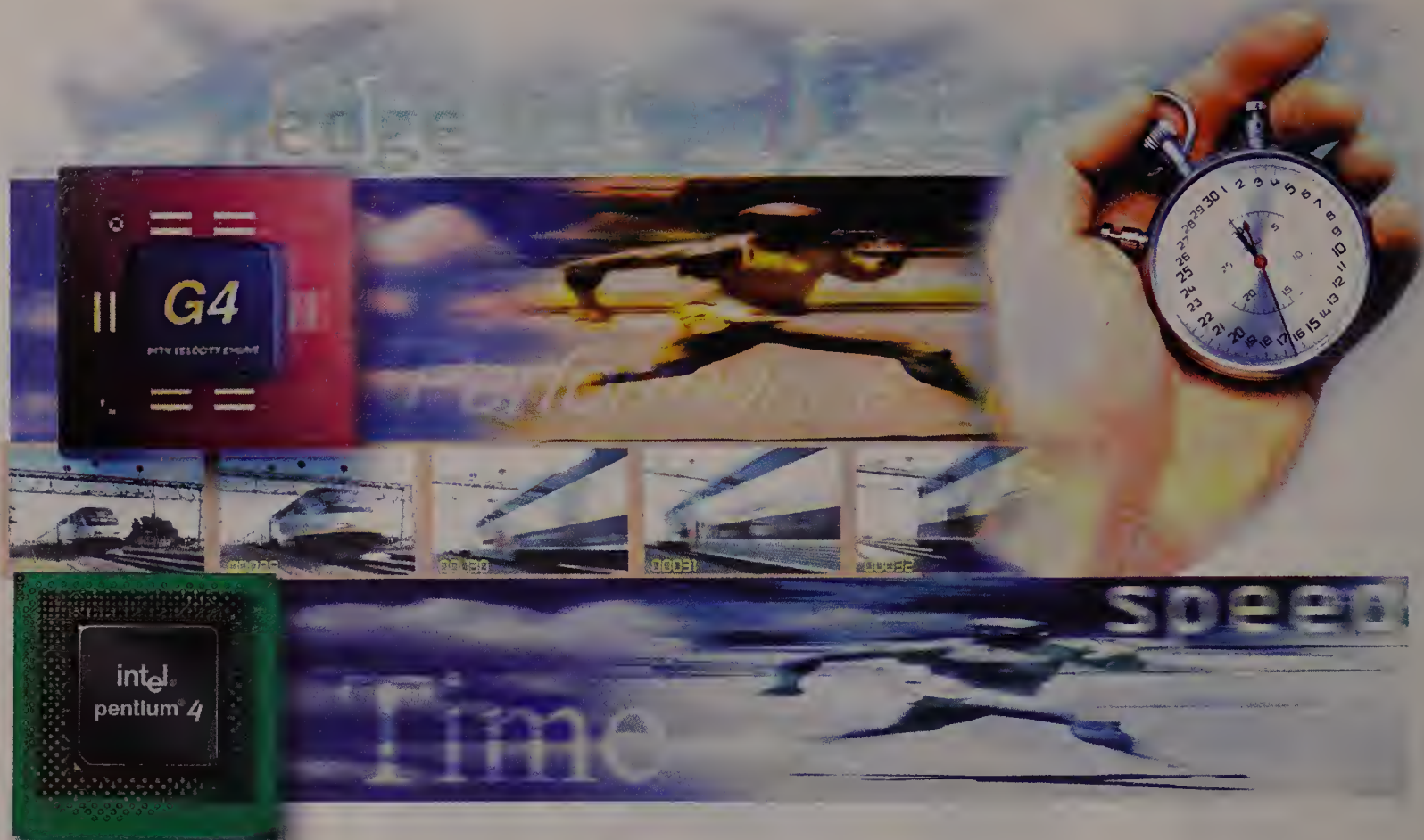
707-566-3831

info@micromat.com

www.micromat.com

©2001 Micromat, Inc. All rights reserved. Drive 10 is a trademark of Micromat, Inc. TechTool is a registered trademark of Micromat, Inc.

Circle 37 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



## POWERPC VS. PENTIUM

# MORE THAN JUST MEGAHERTZ

GO TO A MACWORLD EXPO KEYNOTE SPEECH, and you're bound to see it—a demo that shows a Mac blowing away its Wintel rivals. Apple executives run an Adobe Photoshop file on machines with the fastest available PowerPC and Pentium processors: the Mac sprints to the finish line first, and the Wintel PC staggers down the home stretch like a weekend jogger running a first marathon.

Apple's point is really quite simple: megahertz numbers aren't everything. (See "Does MHz Matter?" elsewhere in this issue.) Chip architecture is just as important—that's what helps a Power PC CPU outperform a faster

Pentium chip. For example, at the January 2001 Macworld Expo, a 733MHz Power Mac G4 finished a Photoshop test 33 percent faster than a PC with a 1.5GHz Pentium 4 processor did.

Does Apple's example hold up in a real-world road race? To find out, we ran six Photoshop 6.0.1 operations on the fastest PowerPC and Pentium chips we could find: a 733MHz Power Mac G4 and a Gateway Performance 1500XL with a 1.5GHz Pentium 4 processor (with added memory and an Nvidia GeForce2 MX graphics card, for more-comparable performance).

Going up against a Pentium 4 processor roughly twice its speed, the G4 more than held its own. The

## A Photo Finish?



Best results in bold. Shorter is better.	ADOBE PHOTOSHOP 6.0.1						
	Gaussian Blur 10	Unsharp Mask 2.3	Resize 50 Percent	RGB-to-CMYK Conversion	Rotate 0.3 Degrees	Lighting Effects	Total Time
Apple Power Mac G4/733	<b>5</b>	<b>6</b>	<b>2</b>	<b>14</b>	<b>9</b>	<b>6</b>	<b>42</b>
Gateway Performance 1500XL Pentium 4 (1.5GHz)	7	4	3	23	12	6	55
	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better
Scores are in seconds. We set displays to 1,024-by-768-pixel resolution and 24-bit color. The Apple Power Mac G4 had Mac OS 9.1 installed, 256MB of RAM, and virtual memory disabled. The Gateway Performance 1500XL was running Windows ME and had 256MB of RAM.—Macworld Lab testing by Jeff K. Milstead							



Mac and the PC performed most of the tasks in about the same time, with the Mac the decisive winner in two tests.

How did a Mac with a 733MHz processor outperform a 1.5GHz machine? Credit AltiVec, the subprocessor built into a G4—it allows the chip to render graphics and perform calculations faster than an ordinary PowerPC CPU. Adobe designed Photoshop to take advantage of AltiVec; hence the Mac's speedy performance in Photoshop tests. (In April, Adobe announced a plug-in that optimizes Photoshop 6 for the Pentium 4.)

But try other applications, and the speed advantage that the Mac

enjoys over a Pentium PC quickly evaporates. Operations in Microsoft Office took longer on the G4—more than three times as much time in one case. Only line-by-line scrolling tests in Word and Excel were faster on the Mac.

The MP3-encoding test is a perfect example of the PowerPC G4 chip's worst-case scenario. Since the Mac version of the MVP player and encoder hasn't been optimized for AltiVec, the G4 lags behind the PC version. (When running AltiVec-friendly SoundJam, the PowerPC edges out the Pentium. Our test also involved reading audio-CD data from the G4's sluggish SuperDrive, which slowed things down further.)

Architectural differences between the Mac and Windows platforms account for the PowerPC's lower Quake III frame rate. Most PCs have a sound card to take the load off the host CPU during game play; the extra processing demands on Apple Sound Manager sent the Mac's score even lower. With Sound Extension turned off, the PowerPC's scores improved.

It's not just marketing spin when Apple says processor speed isn't the only way to determine whether a computer will zip through a task. But if the other factors involved don't favor the Mac, performance will lag behind that of a Pentium machine, megahertz gap or no.—JEFFY K. MILSTEAD AND PHILIP MICHAELS

Speed Limits							
Macworld LAB TEST							
Best results in bold. Shorter is better. Longer is better.	MICROSOFT WORD 9			MICROSOFT EXCEL 9		MVP 1.2	QUAKE III
	Document Scroll	Search and Replace	Auto-summarize	Recalc	Document Scroll	MP3 Encode	Time Demo
Apple Power Mac G4/733	17	49	29	36	11	276	82
Gateway Performance 1500XL Pentium 4 (1.5GHz)	51	40	8	22	38	188	126
	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	Better ▶
Word, Excel, and MVP scores are in seconds; Quake scores are in frames per second. The Apple Power Mac G4 had Mac OS 9.1 installed, 256MB of RAM, and virtual memory disabled. The Gateway Performance 1500XL was running Windows ME and had 256MB of RAM.—Macworld Lab testing by Jeffy K. Milstead							

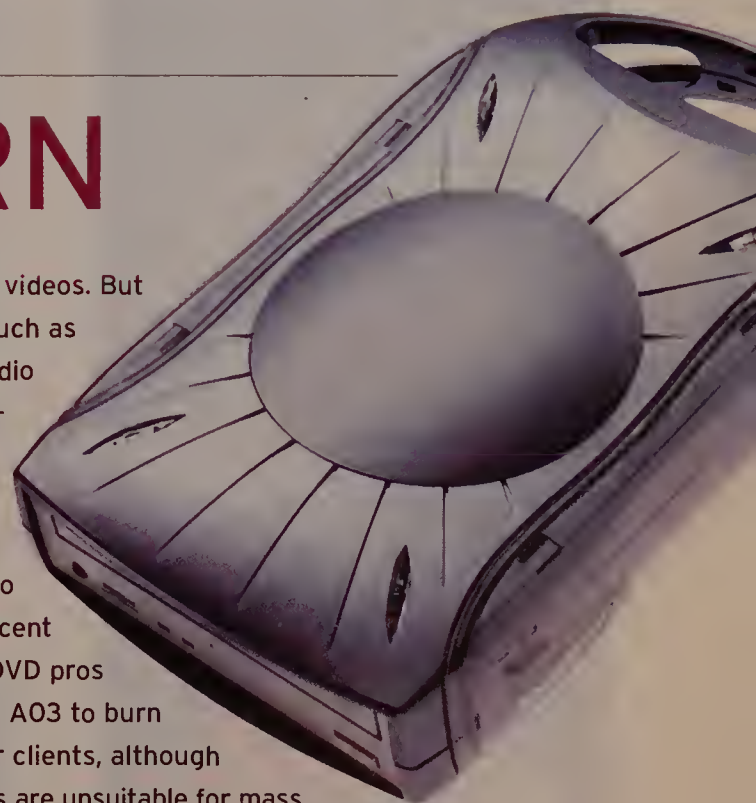
NO SUPERDRIVE? NO PROBLEM.

## BURN, BABY, BURN

If you pine for a SuperDrive but don't want to sell the Power Mac G4 you bought just last winter, don't worry—DVD recording isn't out of reach. At the heart of Apple's SuperDrive is Pioneer's DVD and CD burner, a revolutionary IDE drive that can read and write four formats: DVD-R, DVD-RW, CD-R, and CD-RW. This \$995 drive hit the retail market in May as the Pioneer DVR A03 (800/421-1404, [www.pioneerelectronics.com](http://www.pioneerelectronics.com)). CD Cyclone sells it as the DVDRexo DVD-R/RW, a \$990 FireWire external drive (714/247-0099, [www.cdcyclone.com](http://www.cdcyclone.com)). LaCie plans to ship a \$999 DVD-R/CD-RW FireWire drive in June (503/844-4500, [www.lacie.com](http://www.lacie.com)).

Although Apple packages its iDVD application exclusively with SuperDrive-equipped G4s, Mac users can turn to several DVD-creation apps, all of which will work with the new Pioneer drive. Can you use it to, say, copy an *X-Men* DVD? Nope. The DVR A03 burns general-use DVD-R and DVD-RW discs, which don't permit bit-for-bit copies of Content Scrambling System-

encrypted (CSS) videos. But with programs such as Apple's DVD Studio Pro, you can create a professional-looking DVD of your iMovie homage to Fellini or your recent trip to Cancún. DVD pros can use the DVR A03 to burn preview discs for clients, although general-use discs are unsuitable for mass reproduction. Pioneer's drive also writes CD-Rs at 8× speed and CD-RWs at 4×. So you can still send a VideoCD to your family back home, for example, or burn a compilation of polka music—whatever lights your fire.—ANTON LINECKER



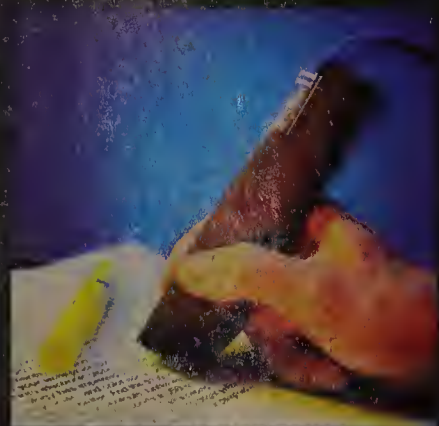


## MAC STUFF

# The Pen Is Mightier

**BEHOLD THE NOBLE HIGHLIGHTER,** whose fluorescent colors have marked up important documents seemingly since the days of the first cave paintings. But just as other prehistoric office tools have gone by the wayside in favor of more advanced instruments—the mimeograph machine giving way to the color laser copier, the three-martini lunch replaced by the fruit-and-wheatgrass smoothie—perhaps the highlighter must now evolve.

That's the notion behind the new IrisPen II, coming this summer from Image Recognition Integrated Systems (800/ 447-4744, [www.irisusa.com](http://www.irisusa.com)). Roughly the size of a Magic Marker, the \$129 IrisPen is an electronic highlighter—as you roll it across a document, the internal scanner captures text and enters it into your word processing application. Worried that IrisPen will turn your data into electronic gibberish? The company says new character-recognition technology has improved the accuracy rate to 99 percent on black-and-white, gray-scale, and color documents. Unlike earlier, serial-port versions of the IrisPen, this model sports a USB connection. True, the IrisPen's case is an undistinguished dark gray, not eye-catching yellow or hot pink. But that seems a small sacrifice for progress.—PHILIP MICHAELS



## FILTERING THE WEB

# Where DON'T You Want to Go Today?

THE WORLD WIDE WEB CAN OPEN YOUR EYES to material you didn't know existed. The trouble is, not all of that material is suitable for everyone's eyes. That's the argument for Internet-filtering software—applications that block access to potentially objectionable Web sites and prevent young 'uns from wandering into the Web's seedier neighborhoods. But perhaps they do their job too well. We installed three of the more user-friendly filtering applications: ContentBarrier, from Intego (\$40; 305/868-7920, [www.intego.com](http://www.intego.com)); KidSafe, from Apple (free; 800/6927753, [www.apple.com](http://www.apple.com)); and AOL 5.0's parental controls (subscription prices vary; 800/827-6364, [www.aol.com](http://www.aol.com)). We used each program's most restrictive

settings—turning on all 26 of ContentBarrier's filtering categories; selecting the Children 12 And Under filter in AOL's Web-surfing controls; and using KidSafe's default setting, which lets you visit only sites OK'd by a panel of educators. Then we visited sites that we thought were squeaky-clean. The results? Either the Web is a lot more risqué than we imagined, or Internet-filtering software needs a healthy dose of parental common sense to be truly helpful.—PHILIP MICHAELS

## THE NOT-SO-USUAL SUSPECTS

WEB SITE	CONTENT-BARRIER	KID-SAFE	AOL 5.0	VERDICT
CNN	●	○	○	No news is not always good news.
Macworld	○	●	○	Was it something we said, Apple?
Apple	○	○	○	Apple is a pure, blameless creature.
Microsoft Mactopia	○	○	○	It is not wise to anger Mr. Gates.
Napster	●	●	●	Shawn Fanning just can't buy a break.
CaP Cure	○	●	●	Because if there's one thing we have to keep away from the kids, it's cancer information.
Democratic Party	●	●	●	Blame it on that notorious potty-mouth, Senator Russ Feingold.
Republican Party	○	●	●	So much for family values.
Encyclopedia Britannica	○	●	●	Perhaps a little learning really is a dangerous thing.

○ = accessed; ● = denied.



# Could Your AirPort Come Under Siege?

**W**IRELESS NETWORKS BASED ON the same technology as Apple's AirPort have spread throughout homes and offices small and large. That ubiquity has meant greater dependence: most AirPort users would now find doing without this wireless technology cruel and unusual punishment. In fact, the only thing that may match the growing acceptance of the wireless-technology standard known as 802.11b is the widespread confidence users have in their networks' security.

That confidence is misplaced. Several research groups have discovered that the security of the data flitting

the tools to break into a closed, WEP-encrypted wireless network, but it's just a matter of time before automated tools capable of doing precisely that appear on the scene.

When researchers first published their vulnerability findings, the IEEE 802.11 Working Group that approved WEP didn't admit its error, instead trying frantically to downplay the problem's importance.

At the moment, remedies appear to be many months away. And wireless-hardware makers are noncommittal about whether it will even be possible to upgrade existing products to make them secure.

If you use AirPort or any other 802.11b system, you should contact the vendor of your wireless hardware, tell it how much you care about your data's security, and ask when it plans to fix the flaws in WEP. WEP is not secure by a long shot, and the consumers who bought into 802.11b and

created the great demand from which vendors are now profiting deserve proper protection for their networks. That said, 802.11b itself is still wonderfully useful technology and should not be shunned merely because of WEP's shortcomings. Knowing precisely how your wireless network and its data are protected will help you decide whether a wired network suits your needs best after all.—STEPHAN SOMOGYI

**More Info:**  
[www.isaac.cs.berkeley.edu/isaac/wep-faq.html](http://www.isaac.cs.berkeley.edu/isaac/wep-faq.html)

Want to find out more about WEP and 802.11? Check out this report by Internet Security, Applications, Authentication, and Cryptography.



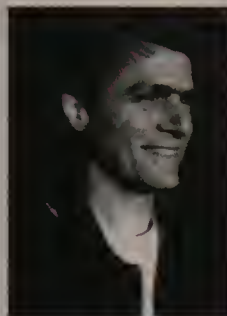
between your AirPort Base Station and your Mac is not as ironclad as you may assume.

Apple's AirPort technology allows you to create closed networks, which only someone who knows the name of the network can join. You can add a password to your network and thereby encrypt wireless data using a scheme called Wired Equivalent Privacy (WEP).

But WEP is a poorly designed security system. AirPort's WEP was already considered weak because of its short, 40-bit encryption key. But as it turns out, design flaws in WEP mean that using even 128-bit keys makes it only a bit more difficult for miscreants to insinuate themselves into your wireless data. Now it takes a little elbow grease to create

## PowerBooks Rock

Q&A with BRYAN ADAMS



Bryan Adams has topped the U.S. record charts four times. He has a Grammy and an American Music Award. So what artistic passion is the Canadian rocker pursuing with his

PowerBook? Photography. It's clear Adams isn't stuck in the "Summer of '69"; he's a 21st-century Mac-head who uses his PowerBook for just about everything.—ADELIA CELLINI

**More Info:** [www.macworld.com/2001/07/buzz/badams.html](http://www.macworld.com/2001/07/buzz/badams.html)

Bryan Adams talks about meeting the pope and jamming with the Who.

**Q:** What Mac do you currently use?

**A:** I use a 500MHz PowerBook G3. It's basically my entire workshop/office/archive/communicator. Lately I've been using it to retouch photographs I did for a fashion campaign by British designer John Richmond. It's such a great computer.

**Q:** Any other computers?

**A:** The only other computer I ever had was a Tandy laptop back in the late 1980s. I was even using e-mail back then, if you can believe it. You used to have to take the phone receiver off the cradle and put it in a separate holder to transfer e-mail.

Peter Gabriel and Bob Clearmountain were the only people I knew back then that had it.

**Q:** How do you feel about the proliferation of MP3s?

**A:** It's just advanced mutated radio play. I wish I could get more upset about it, but I can't. I've been bootlegged so heavily over the years, I just have to laugh. My record company once told me that in 1993, there were two bootlegs to every real record sale of mine on the black market. What can you do? The industry that created the CD format is the same one that's proliferating the copying market.

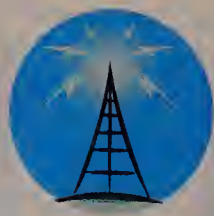


# Product Watch



## RELEASED

- A utility for importing QuickBooks data into accounting programs from MYOB (800/322-6962, [www.myob.com](http://www.myob.com)): **MYOB Conversion Assistant** sends QuickBooks Pro data to MYOB Account-Edge. Conversion Assistant is available as a free download and can be purchased by mail for \$19.
- Imaging software from RealViz (415/615-9800, [www.realviz.com](http://www.realviz.com)): **Stitcher** lets users create fully spherical panoramic images and export them to various formats, including QuickTime 5. It sells for \$800 and runs both in Mac OS 9 and natively in Mac OS X.



## ANNOUNCED

- The dissolution of a merger deal between Mac router maker Netopia (510/814-5100, [www.netopia.com](http://www.netopia.com)) and wireless-Internet-hardware maker Proxim (800/229-1630, [www.proxim.com](http://www.proxim.com)): The two companies called off their planned merger in the face of a slowing technology sector.
- A 3-D Web technology by Adobe (800/833-6687, [www.adobe.com](http://www.adobe.com)): **Atmosphere** is a professional Web tool for authoring, viewing, and interacting with immersive, virtual 3-D worlds. A Mac beta will be available this summer; the product release is set for late summer.



# What's HOT

SPECIAL MAC OS X EDITION

1. Crowds jam Cupertino store for midnight release of Mac OS X. *Some people go away disappointed, however, due to a slight mix-up over what X stands for.*
2. Applications seem to run slower in Mac OS X's Classic environment than in OS 9. *Well, we're typing this list in Classic, and we haven't noticed any performance... nce... iss... ues... at... a... l... l.*
3. Macromedia's FreeHand 10 runs natively in Mac OS X. *Not to be outdone, Adobe has launched its new "Still Proudly Supporting Mac OS 9" campaign.*
4. The new iBook ships without Mac OS X installed. *"We didn't want to frighten the children," Apple executives explain.*
5. Windows XP bears a striking resemblance to a certain Mac OS. *"That's preposterous," declares an angry Bill Gates after showing off XP's sporty Aqua interface.*

## BEHIND THE SCENES

# SELF-MADE ANIMATION



WALKING, TALKING, AND LOOKING PRETTY is a tall enough order for most actors. The last thing they need to worry about is how to operate a computer when they're on camera.

Cue Bob Self. The longtime Mac enthusiast writes mini-applications to run on the computers that appear in movies and on TV. Self's work gives audiences the illusion of a working computer while eliminating the possibility that an actor might click on the wrong button during a critical scene.

Self's work has appeared on *Gilmore Girls*; *Ally McBeal*; and most notably, *Boston Public*—Self supplies the show's teacher-mocking, Macromedia Flash-like animations that appear on a fictional student Web site.

Self begins his *Boston Public* work after receiving a script from series creator David E. Kelley. Like human actors, the computer needs to follow the script exactly. Self takes a first pass on a blue-and-white 350MHz Power Mac G3 with 900MB of RAM, using Adobe Photoshop and After Effects.

Self imports his Photoshop files into Macromedia Director to create sequences in which a mouse click opens other Photoshop images, mimicking a working computer. If the script requires the actors to type, Self creates animations that display one correct letter for each keystroke—no matter which key the actor hits. The final product goes on a CD, which is what's running whenever actors use a computer in front of the camera.

But you can't just point a camera at a CRT and film away. The monitor's refresh rate must be synchronized with the 24 frames-per-second shooting speed of a film camera—even when the computer screen is just in the background.

Fortunately, Self never has to worry about his computers throwing a star tantrum—unless he programs them to.—GREGG WRENN



## UPDATED

- **Office 2001** by Microsoft (800/426-9400, [www.microsoft.com](http://www.microsoft.com)): Service Release 1 is a free download that provides enhanced compatibility with both Mac OS 9.1 and Mac OS X's Classic mode. It also features improvements to Office's Word, Excel, PowerPoint, and Entourage applications.
- **Windows Media Player** by Microsoft (800/426-9400, [www.microsoft.com](http://www.microsoft.com)): version 7 supports the newest media codecs from Microsoft, Windows Media Audio and Video 8. The new codecs deliver near-DVD-quality video.
- A Shockwave authoring tool by Macromedia (800/470-7211, [www.macromedia.com](http://www.macromedia.com)): **Director 8.5 Shockwave Studio** uses Intel Internet 3D Graphics software, so users can deliver scalable 3-D content over the Web to anyone with a Shockwave player. It will cost \$1,199; users of version 8 can upgrade for \$199; users of prior versions, for \$399.—Compiled by MATHEW HONAN





## GL1

**Professional performance in a compact Mini DV.**

- 20x Optical Zoom Lens plus 100x Digital Zoom with Optical Image Stabilizer™
- L-series Fluorite Lens used by professional photographers
- 3CCD with pixel shift gives you the highest resolution and the sharpest color available
- Shoot in Movie mode, take pictures in Photo Mode or record 30 frames per second for a cinematic look and internet compatibility.
- Record directly from analog camcorders



## optura 20

**More versatility than ever in a Mini DV.**

- 12x Optical Zoom Lens plus 48x Digital Zoom with Optical Image Stabilizer™
- Progressive Scan CCD RGB Primary Color Filter
- Shoot in Movie mode, take pictures in Photo Mode or record 30 frames per second for internet compatibility
- Works with select EOS EX Speedlite Flashes
- Record directly from analog camcorders

## ELURA 200

**A soul mate for your computer.**

- 10x Optical Zoom Lens plus 40x Digital Zoom with Image Stabilization
- Shoot in Movie mode, take pictures in Photo Mode or record 30 frames per second for internet compatibility.
- MultiMediaCard™ for storing, managing, and easy transfer of still images to a PC
- Only 0.86 pounds
- Record directly from analog camcorders



## XL1

**The ultimate Mini DV camcorder.**

- Exclusive XL Mount gives Zoom lens options: Extra Wide Angle 3x, 14x (full manual) and 16x with Optical Image Stabilizer™
- 3CCD with pixel shift gives you the highest resolution and sharpest color available
- 16x SuperRange Optical Image Stabilizer™ Lens comes standard
- Accepts EOS EF Super Telephoto camera lenses with optional EF adapter
- Full manual control

**NEW**

## ZR30MC

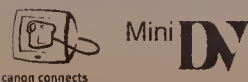
**The ZR20, ZR25MC and ZR30MC are perfect companions for making digital home movies.**

- Canon 10x Optical Zoom Lens plus 200x Digital Zoom with Image Stabilization
  - Store still images with an MMC or SD Memory Card (ZR25 MC and ZR30 MC only)
- Transmit power to an attachable microphone or video light (ZR30 MC only)
- Record directly from analog camcorders



Each of our digital camcorders has an IEEE 1394 (FireWire®) digital terminal for easy computer connectivity, superior picture clarity you can only get from Canon lenses, an optional Floppy Disk Adapter for capturing stills, and the Mini DV format. Because what you record is just the beginning.

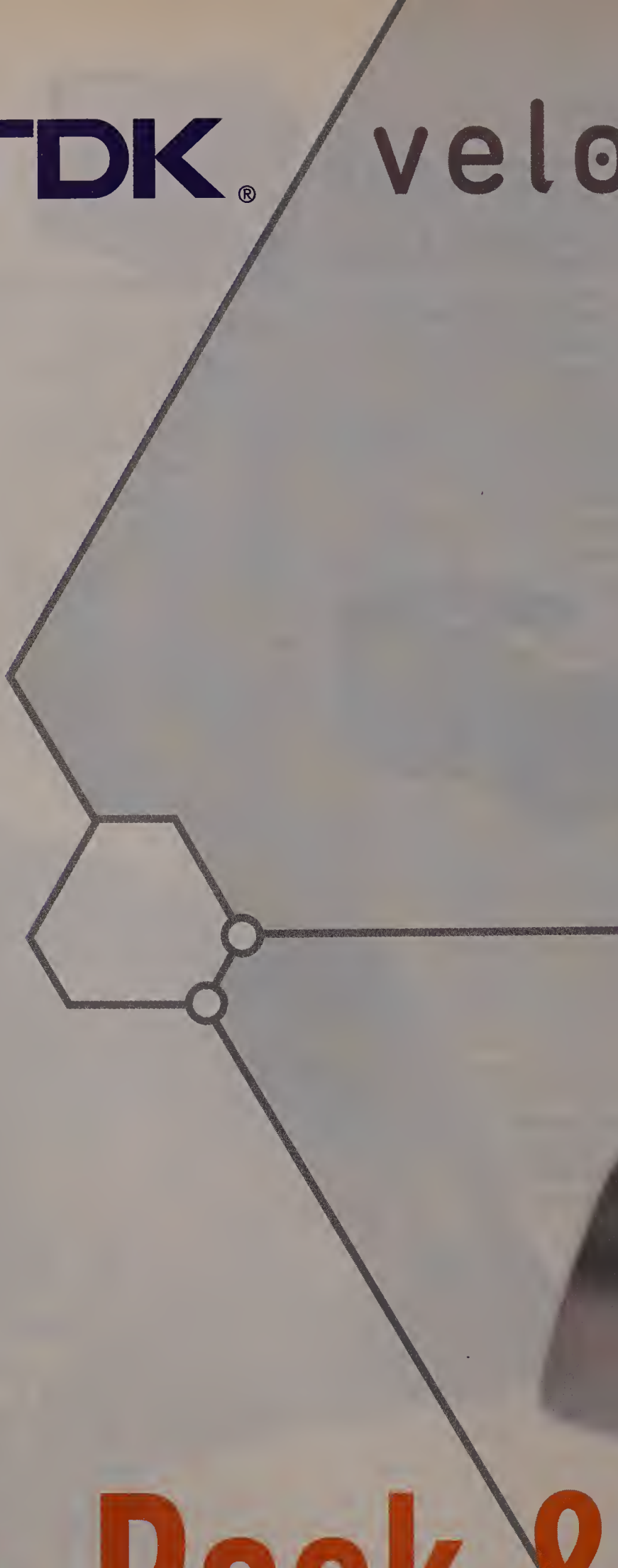
©2001 Canon U.S.A., Inc. Canon, Canon Know How, Digital Motor Drive, Optical Image Stabilizer, Canon Connects and the Canon Connects logo are trademarks of Canon Inc. FireWire is a registered trademark of Apple Computer, Inc., registered in the U.S. and other countries. SD is a trademark of 3C-LCC. MultiMediaCard is a trademark of Infineon Technologies AG.



**Canon** KNOW HOW™



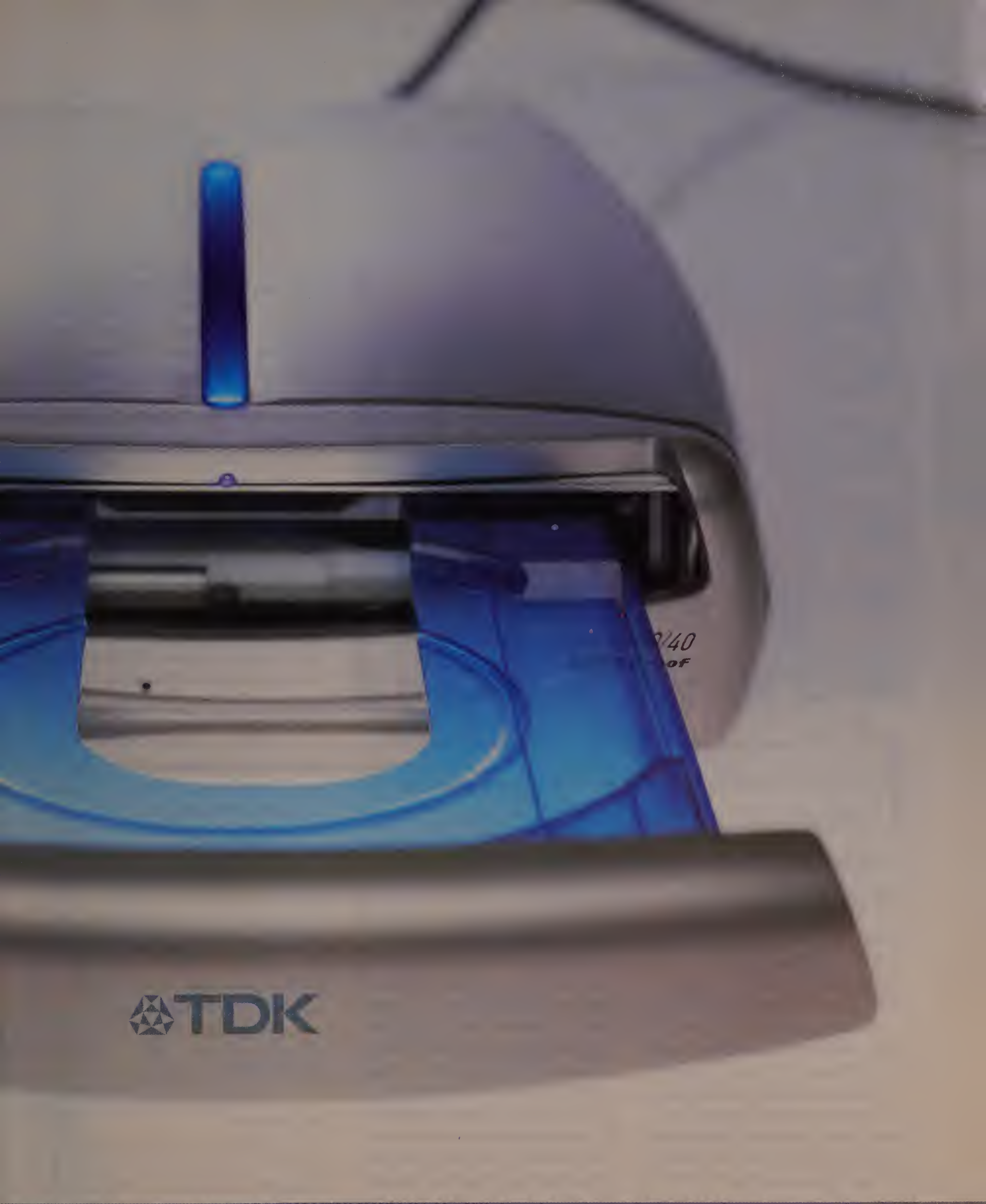
velocd™




# Rip, Rock & Roll

The ultimate performance burner delivers fastest-ever 40xrips and true 16x burns for perfect recordings every time. The external velocD CD-RW burner works with all IEEE-1394 compliant Mac and PC systems. Discover the full line velocD story at the sweetspot of digital recording, [www.tdk.com](http://www.tdk.com).





 **TDK**

**MUSIC / DATA / PHOTO / VIDEO**

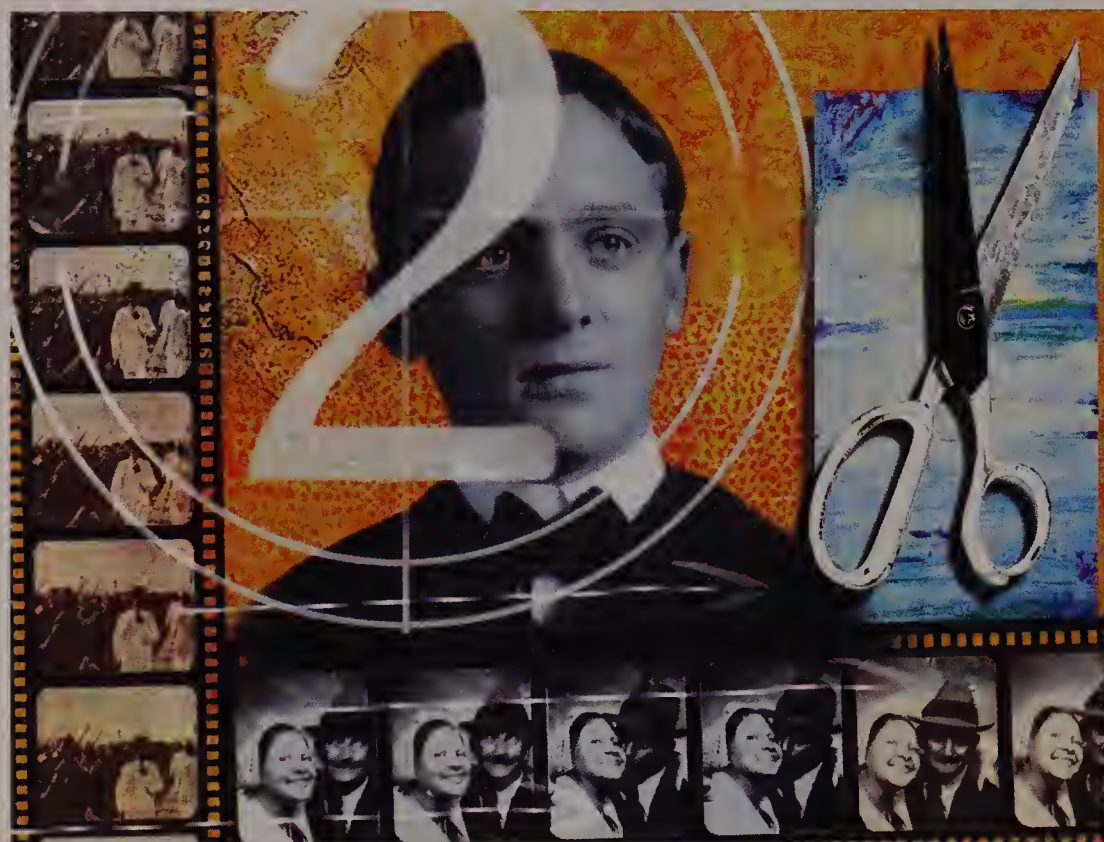


FULL MULTITASKING CAPABILITY  
**BURN-Proof™**  
STOPS buffer underrun ERRORS

# Final Cut Pro 2

*Superb Upgrade Enhances Performance, Media Handling, and More*

BY JIM HEID



**F**orget this summer's blockbusters—the real on-screen action is among video-editing programs. Earlier this year, Adobe released Premiere 6, a greatly improved version of its editing software (🔴🔴🔴🔴; *Reviews*, May 2001). Apple has just returned fire with Final Cut Pro 2, the first major update of its high-end editing

package since the product's release in 1999. Version 2 brings improvements in performance, media management, title creation, and documentation—it includes the best manual I've ever seen, a biceps-building beast of more than 1,400 pages.

When Final Cut Pro debuted, it blew past the slow and buggy Premiere 5. But Premiere 6 is a solid contender, and deciding on a program to buy means weighing Final Cut Pro 2's faster performance and broader capabilities against Premiere 6's lower cost and superior integration with the rest of the Adobe product line.

## Power and Performance

Final Cut Pro 1 offered a refined, responsive user interface and introduced innovations such as windows whose contents update as you move and resize them. Apple didn't tinker with success—Final Cut Pro 2 looks nearly identical to its predecessor (see “Making the Cut”). It also offers the same versatile editing options: you can edit by dragging video clips to the Timeline or Canvas window, and you can use the mouse or a vast array of keyboard shortcuts to adjust clip lengths and perform other editing tasks.

In the new Cutting Station mode, many of Final Cut Pro's advanced features are hidden. Users working on visually simple projects may prefer this mode, as may newcomers—but even in this streamlined mode, Final Cut Pro is more complex than Premiere.

Apple has fine-tuned Final Cut Pro to take advantage of the G4 processor's Velocity Engine circuitry and of multiprocessor Macs. Time-consuming tasks, such as rendering transitions and crunching through complex motion-graphics sequences, are dramatically faster. Apple claims performance gains of roughly 30 percent over earlier versions and 70 percent on multiprocessor machines. In my tests, Final Cut Pro rendered significantly faster than Premiere 6. For example, Premiere took 106 seconds to render a 5-second cross dissolve on a 667MHz Power Mac G4; Final Cut Pro took just 21 seconds.

It gets better. Unlike Premiere, Final Cut Pro 2 can work with third-party hardware to render commonly used effects and motion-graphics features in real time. I tested Matrox's \$999 RTMac PCI video card and found it an ideal companion to Final Cut Pro 2. Besides offering huge productivity gains with real-time effects,

## FINAL CUT PRO 2

**Rating:** 🔴🔴🔴🔴

**Pros:** Elegant interface; fast rendering; supports real-time rendering; excellent documentation.

**Cons:** Weak titling features; can't use Premiere plug-ins; no audio mixer.

**Company's estimated price:** \$999; upgrade, \$249

**Company:** Apple Computer, 800/692-7753, [www.apple.com](http://www.apple.com)



the card has a connector for a second monitor and includes a breakout box for connecting analog video gear.

### Better Capturing, Better Management

Final Cut Pro's batch-capture features make it easy to log and capture video from DV and other remote-control-lable devices. A new scene-detection function makes it easier to work with lengthy DV sequences: choose a command after capturing a segment of video, and Final Cut Pro divides the clip based on the start and stop codes that DV camcorders generate. It's similar to, though more powerful than, the scene-detection feature in Apple's entry-level iMovie.

Keeping track of the files that make up a large project is difficult, but Final Cut Pro has always had strong project-management features. You can segregate content into multiple folder-like *bins*, and you can divide a complex project into multiple sequences, each with its own timeline. (Premiere still lacks the latter capability.)

Final Cut Pro's media-management features are even better than before. You can search for media using a wider variety of criteria and then specify that the program do something with the media it finds. For example, you can search for unused media and delete it from your hard drive to reclaim disk space. Taking a page from iMovie, Final Cut Pro 2 even lets you delete unused portions of individual clips.

### Audio and Titling Tweaks

Though Final Cut Pro's audio features have been improved, the video-editing professionals I talked to feel that Apple didn't go far enough: the program now offers stereo volume meters but lacks an equivalent to Premiere 6's audio mixer, which lets you adjust and automate audio levels in real time.

On the plus side, Final Cut Pro now lets you adjust the volume levels of multiple tracks simultaneously. And it can export audio tracks in the OMF (Open Media Framework) format for subsequent sweetening using

high-end audio tools such as Digidesign's Pro Tools and Mark of the Unicorn's Digital Performer. Final Cut Pro 2 also includes Peak DV, a scaled-down version of BIAS's digital audio editor.

In Final Cut Pro 1, creating titles was cumbersome; in this version, new titling tools make it easier to create animated titles, such as rolling credits. Final Cut Pro is still limited to working with TrueType fonts, however—the program doesn't support PostScript fonts. And you can't mix and match fonts within a title. Fortunately, version 2 includes Boris FX's Boris Script LTD, a superb plug-in that lets you create graphically complex titles containing multiple type styles.

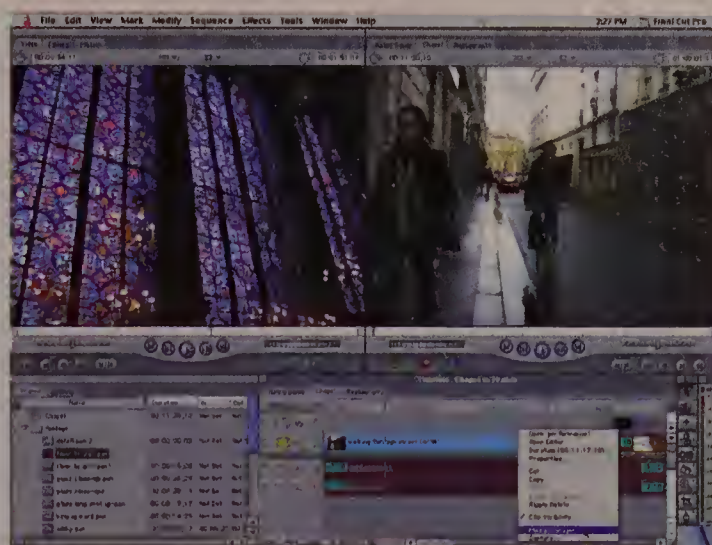
### Final Cut Pro or Premiere?

Many things separate Final Cut Pro and Premiere, but foremost among them is *compositing*: the ability to layer multiple video tracks and animate and resize them over time. Final Cut Pro has rich compositing features, whereas Adobe leaves that step to Premiere's sibling, After Effects.

One price of Final Cut Pro's versatility is, well, its price—\$999, versus Premiere's \$549. Final Cut Pro also demands at least 192MB of RAM (but prefers 256MB); Premiere 6 runs comfortably on a 128MB machine.

Premiere is also tightly integrated with other Adobe products. For example, it can import Illustrator artwork and provides better support for Photoshop files, and After Effects can directly import Premiere projects. Final Cut Pro, while more powerful than Premiere, is more insular.

So which program should you choose? Premiere 6 on its own is the better bargain, but you can also buy it as part of Adobe's Digital Video Collection—for \$1,199, you get Premiere, After Effects, Photoshop, and Illustrator: an appealing package if you're outfitting a new editing system.



**Making the Cut** Final Cut Pro 2's elegant interface is packed with editing features and keyboard shortcuts.

Premiere is also easier to learn and lets you choose from numerous third-party video and audio plug-ins, few of which work with Final Cut Pro. And unlike Final Cut Pro, Premiere is available for Windows, making it a potentially better choice for cross-platform studios.

But for video professionals, Final Cut Pro is the program to buy. It's far better suited to long-form projects, thanks to its superior media-management features and its ability to divide a lengthy project into multiple sequences. Its compositing features aren't as rich as those of After Effects, but many users will be willing to make that sacrifice for the convenience of being able to work in one program.

Final Cut Pro has also become hugely popular among film and TV professionals. In Los Angeles, for example, there's a 600-member Final Cut Pro user's group ([www.lafcpug.org](http://www.lafcpug.org)). Premiere just doesn't enjoy that kind of community among video pros.

### Macworld's Buying Advice

Final Cut Pro 2 isn't a slam-dunk winner over Adobe Premiere 6, due to Premiere's lower price, audio mixer, and ties to other Adobe products. Still, it's a superb sequel. Its enhancements address the needs of video professionals, and its performance on a G4 Mac is stunning. Final Cut Pro's unmatched depth of features has made it the editor of choice for video pros, and version 2 will only strengthen that position. **m**



# G4 Upgrade Cards

*Give a Speed Boost to Your Power Mac G3*

BY DAVID READ

Perhaps you've recently upgraded to Mac OS X, and you notice your once acceptably fast blue-and-white Power Mac G3 beginning to show its age. Luckily, this Mac's 100MHz system bus makes it a prime candidate for a processor upgrade, which can give you nearly top-of-the-line performance. Macworld Lab examined

PowerLogix's 450MHz PowerForce G4 ZIF card; Sonnet Technologies' 400MHz and 500MHz Encore ZIF G4 cards; and XLR8's 400MHz, 450MHz, and 500MHz Mach Speed G4 ZIF MPe cards. We found that although these cards performed similarly (relative to their speeds), those from Sonnet and XLR8 offered the most extras.

## G4 or Not G4?

A G4 processor has a subprocessor called AltiVec (Apple calls it the Velocity Engine), which can dramatically boost performance—but only in applications designed to take advantage of it (such as Adobe Photoshop and some other image-editing programs, MP3

encoders, and video-editing packages). Not many applications are optimized for AltiVec, but if you happen to work with one of them every day, you'll want a G4. And Mac OS X uses the Velocity Engine much more than Mac OS 9 does, so if you're planning to switch to OS X, a G4 upgrade may be in order.

## Anatomy of an Upgrade

A G4 processor cannot work in a blue-and-white Mac without a firmware patch, which modifies the ROM, preparing the motherboard for the upgrade. But only Sonnet provides a method for removing the patch; you would have to contact the other companies for a removal

procedure (at press time, each was developing this procedure and was hesitant to release it).

XLR8 had the best installation package, providing all of the necessary tools and excellent instructions. Sonnet's instructions were also very well written—especially for users with little experience inside a Mac—with clear, descriptive illustrations and a minimum of jargon.

## Controlling the Cache

Each card has a 1MB L2 cache that, by default, runs at half the processor's speed. (The L2 cache stores frequently used instructions, allowing the processor to operate with greater efficiency.) All the cards come with software that monitors the cache, but the amount of control provided differs from company to company. PowerLogix and XLR8 provide control panels, but XLR8's gives you more control over the cache's speed and other performance parameters. Additionally, XLR8's control panel checks the cache and sets it to the

## Clocking the Velocity Engine



Reference systems in italics. Best results in bold. Shorter is better. Longer is better.	SPEEDMARK 2.1	SOUNDJAM 2.5.2	ADOBE PHOTOSHOP 6.0.1		QUAKE III
	Overall Score	MP3 Encode	Gaussian Blur	Unsharp Mask	Normal
Sonnet Technologies Encore ZIF G4 400MHz	120	2:24	10	14	30
XLR8 Mach Speed G4 ZIF MPe 400MHz	127	2:21	9	13	32
PowerLogix PowerForce G4 ZIF 450MHz	128	2:06	9	12	34
XLR8 Mach Speed G4 ZIF MPe 450MHz	134	2:15	8	12	34
Sonnet Technologies Encore ZIF G4 500MHz	137	2:02	9	12	33
XLR8 Mach Speed G4 ZIF MPe 500MHz	140	2:01	8	11	35
<i>Apple Power Mac G3/450</i>	127	3:00	15	18	31
<i>Apple Power Mac G4/466</i>	157	2:02	6	8	46
	Better ▶	◀ Better	◀ Better	◀ Better	Better ▶

Speedmark 2.1 scores are relative to those of an iMac 350 MHz (1999), which is assigned a score of 100. SoundJam scores are in minutes:seconds. Photoshop scores are in seconds. Quake scores are in frames per second. We tested each card in a Power Mac G3/450 (blue and white) with Mac OS 9.1, 128MB of RAM, a default system disk cache, and virtual memory enabled. We set displays to 1,024 by 768 pixels and 24-bit color. We tested MP3 encoding with an audio-CD track that was 9 minutes and 25 seconds long and converted it using a default setting of 128 Kbps in SoundJam. For more information on Speedmark, visit [www.macworld.com/speedmark](http://www.macworld.com/speedmark).—Macworld Lab testing by Jason Cox



## G4 Upgrade Cards Compared

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	CONTACT	PROS	CONS
Sonnet Technologies	Encore ZIF G4 400MHz	★★★★½	\$349	800/786-6260, <a href="http://www.sonnettech.com">www.sonnettech.com</a>	Good documentation; flexible firmware package; excellent value.	No tools provided.
XLR8	Mach Speed G4 ZIF MPe 400MHz	★★★★½	\$399	770/564-5682, <a href="http://www.xlr8.com">www.xlr8.com</a>	Excellent installation package; MP enabled; good software; excellent value.	Firmware-patch uninstaller not included.
PowerLogix	PowerForce G4 ZIF 450MHz	★★★	\$449	877/849-2504, <a href="http://www.powerlogix.com">www.powerlogix.com</a>	Easy to install; offers good performance boost.	Firmware-patch uninstaller not included; no tools provided.
XLR8	Mach Speed G4 ZIF MPe 450MHz	★★★★½	\$449	770/564-5682, <a href="http://www.xlr8.com">www.xlr8.com</a>	Excellent installation package; MP enabled; good software.	Firmware-patch uninstaller not included.
Sonnet Technologies	Encore ZIF G4 500MHz	★★★★	\$499	800/786-6260, <a href="http://www.sonnettech.com">www.sonnettech.com</a>	Relatively inexpensive; good documentation; robust firmware package.	No tools provided.
XLR8	Mach Speed G4 ZIF MPe 500MHz	★★★★½	\$599	770/564-5682, <a href="http://www.xlr8.com">www.xlr8.com</a>	Excellent installation package, MP enabled; good software.	Pricey; firmware-patch uninstaller not included.

fastest possible settings (even if they exceed the default settings) automatically and reliably. Sonnet's software is invisible to the user and sets the cache settings to the proper speed during startup. If you don't intend to experiment with overclocking—driving the cache to a higher speed than is recommended, to squeeze out more performance—Sonnet's arrangement will be preferable.

### Pedal to the Metal

XLR8's 450MHz Mach Speed G4 ZIF MPe had a slightly better Speedmark score than PowerLogix's 450MHz PowerForce G4 ZIF; however, the difference was negligible—the Mach Speed beat the PowerForce by only a second when performing a Gaussian blur in Adobe Photoshop, and it even fell a few seconds behind when encoding an MP3 in SoundJam. The performance of both 450MHz upgrade cards was close to that of the 450MHz Power Mac G3 in our Speedmark and Quake III tests, but the upgrades' speeds far exceeded the G3's when it came to Photoshop, which is optimized for the G4.

The Speedmark subtest that looked specifically at disk speed confirmed that the Power Mac G4, with an ATA/66 controller and a newer hard drive, has much better disk performance than the blue-and-white Power Mac G3, with its slower SCSI hard drive. (The faster disk is part of the reason that the 466MHz Power

Mac G4's scores were better than those of the 500MHz upgrade cards.) Even if you upgrade your G3 and your hard drive, you'll be limited by the slower ATA bus.

The upgrades from XLR8 are multiprocessor enabled (MPe). If you purchase a 400MHz MPe ZIF, you can use it as one of the processors in XLR8's multiprocessor upgrade.

### Macworld's Buying Advice

XLR8's upgrades come with all of the tools you need, and its products can later be incorporated into a multiprocessor upgrade. Sonnet's good documentation and low prices make its upgrades exceptionally attractive.

And software that works without intervention, along with easily removable firmware patches, makes Sonnet's upgrade cards excellent choices for those who don't enjoy tinkering with their machines. The 400MHz cards from these two manufacturers are sensible investments. However, the prices of the faster cards begin to approach those of used or refurbished Apple G4s, which have faster hard drives and CD-ROM drives. The G4 upgrade card from PowerLogix is technically sound, but it has no distinguishing features, and its rough documentation makes it less appealing than the others we tested. **m**



From left: The XLR8 Mach Speed G4 ZIF MPe 400MHz, the PowerLogix PowerForce G4 ZIF 450MHz, and the Sonnet Technologies Encore ZIF G4 400MHz

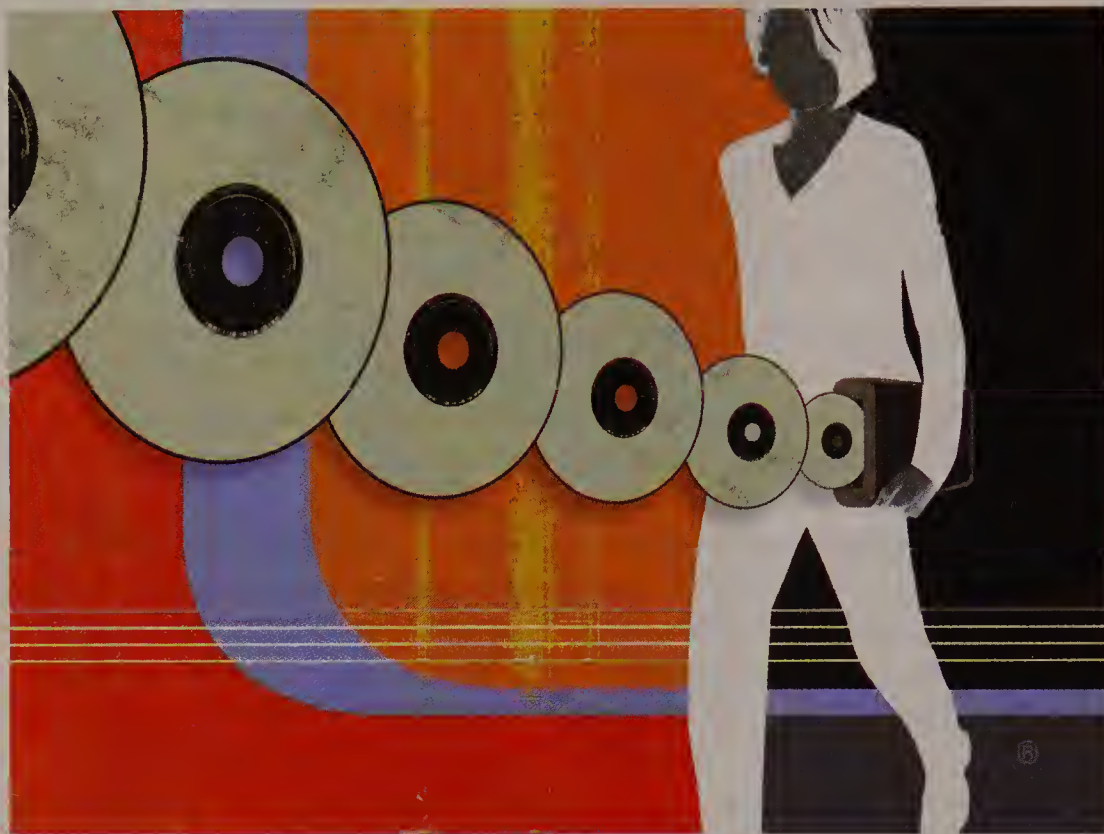
GIBSON



# CD-Burning Software

*Powerful Program Toasts the Competition*

BY JONATHAN SEFF



**N**ot long ago, CD-RW drives were too costly for all but mammoth corporations, ivy-covered universities, and the planet's wealthiest residents. Now they are plentiful and affordable—

Apple is even building them into many of its new Macs. And you have a few choices when it comes to software: CharisMac's Discribe is bundled with Sony drives; Roxio's Toast comes with most others. If your Mac has a built-in CD-RW drive, it will work with Apple's free iTunes and Disc Burner, but you'll get the most out of your drive if you buy a full version of software designed just for burning CDs.

Two packages now available for the Mac are Toast 5 Titanium and Discribe 4. (NeroMax, the Mac version of the popular Windows program Nero, was released in May [too late to be included in this review].) Both programs have many more features than their free counterparts, including the ability to duplicate discs, burn cross-

platform and bootable discs, and burn multiple sessions on a disc. But of the two, Toast has more to offer.

## At Face Value

When you start Toast, you're greeted by a very refined, Aqua-like interface (a free OS X update should be available soon) with a few minor inconsistencies: similar commands are sometimes located in different places.

Discribe's interface is simpler but looks amateurish. The icon for choosing an audio CD is a poorly bit-mapped picture of two eighth notes. And you have to set preferences for each CD you burn.

## DISCRIBE 4.0

**Rating:** ★★☆☆

**Pros:** Performs basic burning functions well; flexible control over disc verification; accurate data-size representation.

**Cons:** Limited support for FireWire and USB drives; rough interface; limited number of burning formats.

**Company's estimated price:** \$100

**Company:** CharisMac, 800/487-4420, [www.charismac.com](http://www.charismac.com)

## TOAST 5 TITANIUM

**Rating:** ★★★★★ 1/2

**Pros:** High-quality MPEG-1 encoding and VCD burning; allows burning in the background; on-the-fly MP3 burning; support for DVD drives.

**Cons:** Minor interface inconsistencies.

**Company's estimated price:** \$90

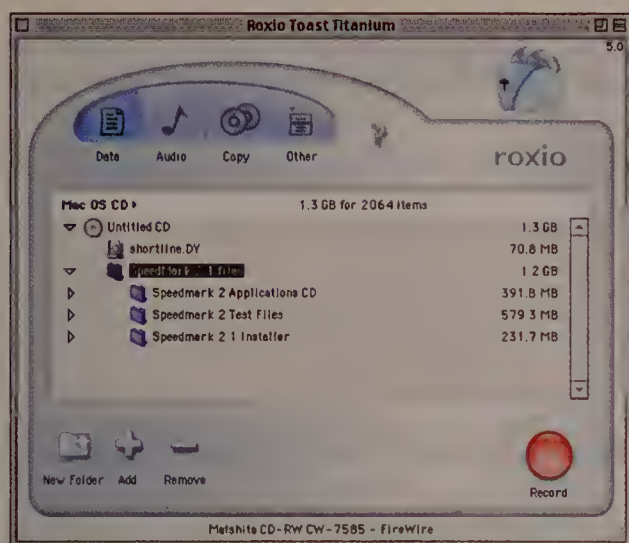
**Company:** Roxio, 800/518-2432, [www.roxio.com](http://www.roxio.com)

## Under the Hood

Both programs support Burn-Proof, a feature that momentarily pauses your burn if it detects potential problems. Keep in mind, though, that your drive must also incorporate this technology—not all do. In Toast, you make the decision to turn on Burn-Proof each time you start to burn—important because you don't want to use it when burning an audio CD (interrupting a drive in process can result in audible glitches); in Discribe, you select the Burn-Proof setting (in the Preferences menu) independently. If your drive doesn't support Burn-Proof, Toast lets you adjust the RAM cache used in burning (to reduce the chances of dropping data), an option Discribe doesn't offer.

Toast lets you burn in the background, so you can surf the Web or





**Aqueous Interface** With Toast 5 Titanium, you can burn many types of discs, including Video CDs.

perform other tasks while a burn is in progress. (This was available in version 4 but was not documented.)

Discribe lets you choose to verify the integrity of your discs before burning. Fortunately, the option is turned off by default, because verification is time consuming. In Toast, you must eject your disc within seconds after it's burned or it will automatically be verified. You can abort the process, but it's a hassle.

Toast supports most CD-RW drives. CharisMac lists about 200 supported drives on its Web site, but only 10 of them are FireWire or USB drives. (Discribe didn't recognize the 12× QPS FireWire drive or Formac's 16× FireWire drive.)

### Bits and Bytes

Both programs can burn HFS and ISO9660 formats, Mac-PC hybrid discs, and bootable Mac volumes; Toast adds support for HFS+ in Mac and hybrid formats.

Toast also includes some functionality of the discontinued Toast-DVD, so you can use it with DVD-RAM, DVD-R, and DVD-RW drives (including those in new Macs), too. And you can use Toast to make backups to Digital Linear Tape (DLT).

When you drag your data into Toast's main window, you see the size of individual files and their icons, but you see the true total only when you click to begin burning your CD. Discribe shows you file sizes and the disc total before you burn.

### Play That Funky Music

In my mind, the coolest thing about CD-RW drives is being able to burn your own music CDs to play in CD players. Both Discribe and Toast let you do just that—each with its own quirks, however.

With Discribe, you can drag only *files* to the CD window. If you try to drag a *folder* containing files, Discribe will change your disc to HFS format, treating all of your audio files as data. Toast has no such problem; it will even import only the audio in a mixed folder containing audio and text.

Toast can burn either AIFF or WAV files directly to CD. And it can convert MP3 files to the audio standard for CD players (16-bit, 44.1kHz, stereo) without having to expand them. That's great if your hard drive doesn't have an extra 600MB to 700MB of space per disc to handle the expanded files. (Burning compressed MP3 files at more than 4×, however, will result in unusable discs.) Discribe can handle both WAVs and MP3s, but it must first convert them to AIFFs.

Both come with utilities for recording analog audio—such as LPs—to your computer: Toast has CD Spin Doctor, and Discribe has Audio Scribe. CD Spin Doctor lets you hear what you are recording through your Mac's sound system. When finished, it displays the waveform of your file, which helps when you define and name your tracks. If you like, you can let the program define the tracks automatically—it searches for places in the waveform where the signal goes flat. Spin Doctor even figures how much recording time you have left on your selected drive. Once you have a large file on your Mac, you can apply filters to clean up pops and clicks.

### Made for TV

One area that Toast has all to itself is burning in the Video

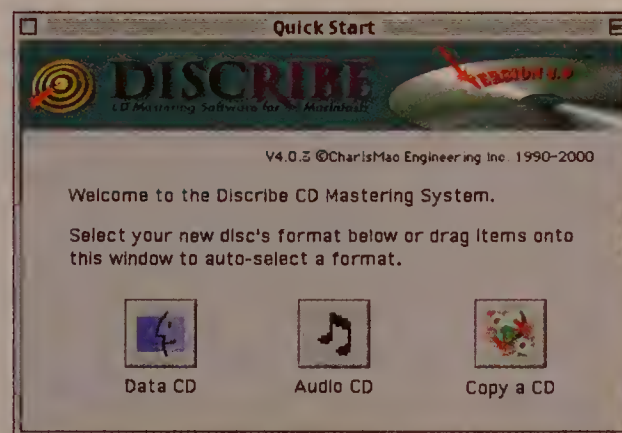
CD (VCD) format. Toast has long been able to burn VCDs—about an hour's worth of 320-by-240-pixel MPEG-1 video that will play on most computers and newer set-top DVD players. But previous versions of Toast could handle only material in the Toast-Ready subset of the VCD format. Toast 5 accepts any White Book-compliant MPEG-1 file (White Book is the standard defining VCD). But that's not even the best part.

Toast 5 has a built-in MPEG-1 encoder—the same technology in Terran Interactive's \$599 Cleaner 5 (★★★★½; *Reviews*, February 2001). So in addition to creating VCDs from existing streams, it can take any QuickTime file or iMovie and create a VCD from it. The process isn't very fast; encoding a one-minute QuickTime movie took 5 minutes and 45 seconds on a G4 and 15 minutes on a blue-and-white G3. But the encoder would cost a lot more purchased separately, so it's hard to complain.

Although a VCD's quality is far beneath that of a DVD, the only hardware you need to create one is a common CD-RW drive.

### Macworld's Buying Advice

Discribe is a relatively easy-to-use program that performs simple tasks well, but Toast is a much richer, more powerful application. Its VCD encoding and burning alone are worth its price (which is \$10 less than Discribe's). But Toast includes a lot more: extra CD- and DVD-burning capabilities, on-the-fly MP3 burning, bundled programs, and even a Y-cable for connecting a Mac with audio inputs. **m**



**Dutiful Scribe** Discribe gives you control of basic functions through a simple interface.



# iDVD 1.0

## Apple Finally Releases Easy-to-Use, If Buggy, DVD-Authoring Software

BY JASON SNELL

Ever since Apple brought FireWire to the Mac and introduced its iMovie video-editing software, the Macintosh has been at the forefront of the digital-video revolution. But one piece of the puzzle was missing: the ability to output digital video to DVD, the most popular digital video-playback format around. With the

introduction of iDVD—and the just-released DVD Studio Pro, Apple's \$999 pro-level product—Apple's digital-video story is finally complete. But for all its promise, iDVD is rife with bugs and quirks that keep it from being a pleasure to use.

### Interface Builder

If you've ever seen a DVD, you know why Apple had to provide special authoring software to go with the DVD-burning hardware on the new 733MHz Power Mac G4. DVDs are more complex than videotapes, with interfaces that have selectable items and clickable buttons for playing movies, enabling special features, and viewing other information. Video files must be compressed into the MPEG-2 format before being written to a DVD (iDVD does this automatically).

iDVD eases the authoring process with a simple drag-and-drop, button-

based interface. The main window contains a preview of what you'll see on the current screen of your DVD. At the bottom is a tool bar with buttons you use to add items to the interface. To add a movie, simply drag its file from the Finder; a button representing the movie will appear in the DVD interface. However, you can't create movies with multiple chapters or stitch individual movie files into a single movie. While you can drag buttons to reorder them, you can't move them from their predefined locations on the screen. And each iDVD screen can contain only six items (although you can create subfolders if you want to add more).

Likewise, it's easy to create collections of still images by clicking on the Slideshow button. Unfortunately, when I dragged 50 JPEG images into the Slideshow window, some appeared out of sequence. You can reorder only one item at a time in this window; worse, the program quit repeatedly when I tried to edit my slide show.

### Preview and Burn

When you're ready to see how your DVD will behave, click on the Preview button; the iDVD window turns into a simulated DVD-player environment, complete with a floating palette

that emulates a TV remote control. Once you're satisfied with your project, click on the Burn DVD button. A helpful gauge shows how much space is left on a disc. (iDVD can write only about one hour of video to each disc.)

The program took about two and a half hours to burn my near-full disc, and the end result was impressive but slightly quirky. When I viewed the disc using Apple's DVD




**Sneak Peek** Use iDVD's Preview command to see how your final product will behave.

Player software, I could not exit to a menu from any of my slide shows. On my Panasonic home DVD player, the slide shows worked fine, but the titles' left edges were cut off—despite assurances from iDVD that the buttons and text were within the screen's "TV Safe" zone.

### Macworld's Buying Advice

iDVD makes the complicated task of creating DVDs impressively easy, but it's far from perfect. If you're thinking about buying a new Power Mac G4 just to get iDVD, beware: you can make it work, but not without a good deal of frustration. **m**

#### iDVD 1.0

**Rating:**  1/2

**Pros:** Easy to use; attractive results.

**Cons:** Limited interface control; awful Slideshow interface; prone to crashes; incompatibilities with Apple DVD Player.

**Company's estimated price:** Free (available only on the Apple Power Mac G4/733MHz with SuperDrive)

**Company:** Apple Computer, 800/692-7753, [www.apple.com](http://www.apple.com)



# CalculationCenter

## *A Gentle Introduction to the Power of Mathematica*

BY CHARLES SEITER

**W**olfram Research's Mathematica (★★★★½; [www.macworld.com/2001/02/05/reviews/mathematica.html](http://www.macworld.com/2001/02/05/reviews/mathematica.html)) is an undeniably powerful program for performing numeric and symbolic calculations. But its interface—which presents you with only a blank page and some symbol palettes—can leave new users won-

dering how to proceed. Wolfram's newest product, CalculationCenter, is an attempt to make the power of Mathematica accessible to new users with just a few minutes' practice. It's the first math program you can use without a manual, and it's the best introduction yet to symbolic math computation.

### Show and Tell

At the heart of CalculationCenter is an interactive help feature called Instant Calculators. Nearly every item in the simplified main menu of calculation modes—Basic Math, Algebra, Calculus, Lists & Matrices, Graphing, Solvers, and Defining Functions—calls up an Instant Calculators wizard that offers an example of the calculation, accepts and formats input for a prob-

lem, and executes the calculation. The Instant Calculators cover such a wide range of problems, you may find that your day-to-day use of CalculationCenter amounts to simply invoking a few of the Instant Calculators wizards to solve problems quickly.

Because the program records the results of calculations in a standard Mathematica notebook, it's easy to run an Instant Calculators example and then modify it in the notebook to solve your particular problem. The Instant Calculators system also greatly simplifies plotting, carefully walking you through details of 3-D parametric plots and offering, for simpler cases, a SmartPlot option that handles the details for you.

Although CalculationCenter is an introductory product, it's still based

on Mathematica, so all functions work in symbolic as well as numeric calculations. The overall scope of the functions is good, if somewhat uneven—for example, Lists & Matrices has a choice for eigenvalues but none of the advanced matrix-decomposition types found in Mathematica.

### Getting Around

CalculationCenter reads standard Mathematica notebooks such as those

### CALCULATIONCENTER

**Rating:** ★★★★★

**Pros:** Simple access to Mathematica functions; easy graphing; reads most MathSource notebooks.

**Cons:** Occasionally produces inscrutable error messages.

**Company's estimated price:** \$295

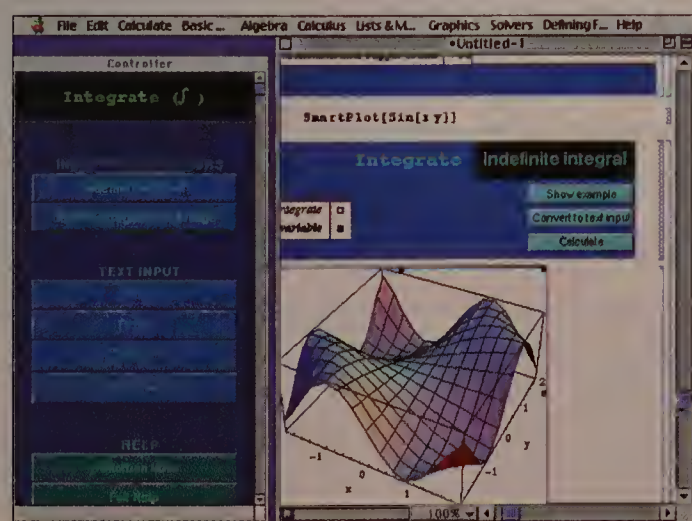
**Company:** Wolfram Research, 800/965-3726, [www.wri.com](http://www.wri.com)

available from Wolfram's MathSource, the giant online repository of user-contributed notebooks. The program doesn't accept notebooks that call on functions from Mathematica's Standard Packages, but most of the MathSource packages we tested ran flawlessly in CalculationCenter. Using MathSource notebooks lets you add a variety of functions—such as statistics, business, and engineering—that CalculationCenter lacks.

One area that needs a bit more work is error handling. For example, if you accidentally enter **Sin[x]**, you'll be treated to half a page of incomprehensible messages that fail to point out the actual typo. Mathematica veterans will be unfazed by such messages, but a product for beginners should do a better job of handling errors.

### Macworld's Buying Advice

CalculationCenter gives new users most of the power of Mathematica without requiring a Ph.D. in math. Thanks to the innovative Instant Calculators feature, you can start working right away without consulting a manual. For a wide range of technical professionals, and for most college course work, this is the computational program to buy. **m**



**Three Easy Steps** CalculationCenter has an Instant Calculators wizard for nearly every function. Click on a button to see an example, format an entry, or run a calculation.



# SmartSound Sonicfire Pro 2.0

*Soundtrack-Creation Application Now Easier to Use*

BY CHRISTOPHER BREEN

**T**hose who've attempted to add background music to digital movies know that it's difficult to find a piece of music exactly as long as a particular scene. Sonic Desktop Software offers a solution to this vexing problem with its SmartSound line of soundtrack-creation software, which automatically creates royalty-free

background scores of any length. Previous versions didn't allow you to view your movie from within SmartSound as you created a score; instead, you had to run the movie in a separate application, note the length of time you wanted the soundtrack to play, and then create the soundtrack in SmartSound. Sonicfire Pro, the latest addition to the SmartSound family, improves upon this approach by allowing you to score a variety of video types—including QuickTime, DV, and AVI—directly within the Sonicfire Pro application.

## Smart Sound

Like previous versions of SmartSound, Sonicfire Pro includes a collection of royalty-free music in a variety of styles. Each musical piece is divided into small blocks; when you ask Sonicfire Pro to create a piece of music that's 37 seconds long, for example, it strings together the

necessary number of blocks in a way that makes musical sense.

The program creates these strings of music via its Maestro feature, an assistant that asks you to select the category of music you want (action or background, for example), a style of music within that category (such as jazz or classical), the soundtrack's length, and a thematic variation. Once you've satisfied Maestro's curiosity, it creates a soundtrack that suits your needs.

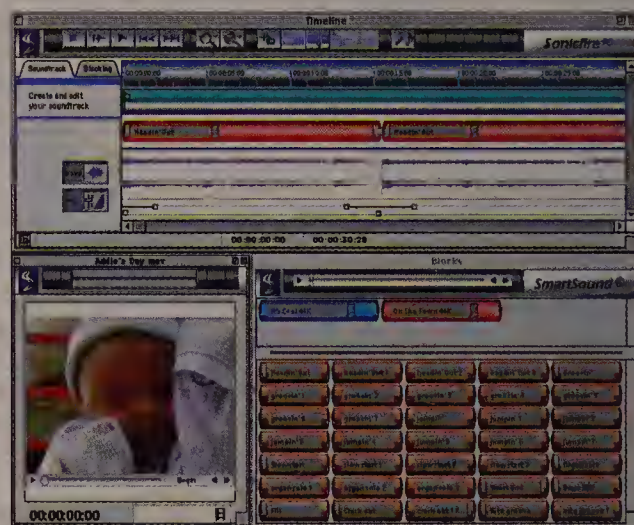
## Smarter Sound

Sonicfire Pro's interface comprises Timeline, Blocks, and Video windows. The musical snippets Maestro helps you create appear as colored bars in the Timeline window; you can expand or contract these snippets by dragging the edge of a bar. The Blocks window contains the individual musical blocks that make up the snippet. The Video window, as its name hints, is for video display.

To score your video, simply start playing your movie and add markers where you'd like music to begin and end, and then run Maestro to audition different scores. As you add bits of music to the video, you can change the score's volume by adding adjustment points to the volume timeline and moving them to create fades

or more-abrupt dynamic changes. Because you can change the sound level only via this graphical interface, however, fine-tuning your score's volume can be difficult.

Included with the program are two music CDs in a format compatible with Sonicfire Pro. Additional collections of music are available for purchase (they cost \$70, for the 22kHz version, and \$130, for higher-quality 44kHz files). I sampled four of these CDs and found the quality excellent throughout. You can also



**Audio with Visuals** With SmartSound Sonicfire Pro's Video window, it's easy to sync your music and video.

turn your own music into SmartSound-compatible files, though only music with a relentlessly steady beat works well with SmartSound's blocking scheme.

## Macworld's Buying Advice

Sonicfire Pro 2.0 is as easy to use as other members of the SmartSound family, and like its siblings, it lets you create and customize dynamic, royalty-free musical scores for your video projects. If your movies would benefit from musical accompaniment, you should certainly give Sonicfire Pro 2.0 a try. **m**

### SMARTSOUND SONICFIRE PRO 2.0

**Rating:** ★★★★★

**Pros:** Easy to use; high-quality scores; lets you see video while adding music.

**Cons:** Difficult to make fine adjustments to volume level.

**Company's estimated price:** \$349

**Company:** Sonic Desktop Software, 800/454-1900, [www.smartsound.com](http://www.smartsound.com)



**PowerShot G1 and Pro90 IS.  
Digital Gets Serious.**

Creative control for serious photographers thanks to 12 EOS picture taking modes plus easy adaptability to Canon lens converters and EOS EX-series Speedlites. This isn't just digital photography, this is photography.

**PowerShot S110 and S300.  
Digital Elegance.**

Stylish, compact and elegant. The newly expanded PowerShot Digital ELPH Series introduces two cameras with amazing new features like Direct Print Mode. Beautiful, aren't they?

**PowerShot A10 and A20.  
Digital Made Easy.**

PowerShot's new A Series was designed with easy-to-use controls so you can concentrate on having fun. Welcome to the digital revolution.

G1

S300  
Digital ELPH

Pro90 IS

S110 Digital ELPH

A20

A10

**are you digital yet?**<sup>TM</sup>

**PowerShot**  
www.powershot.com



**Card Photo Printer CP-10. Digital Made Tangible.**

Now you can print out wallet-sized pictures with the S110, S300, A10 and A20 just as quickly as you take them.

**Canon** KNOW HOW<sup>TM</sup>



# NetBarrier 2.0

*Firewall Fights Off Network Crackers and Privacy Invaders*

**A**S IF NETWORK CRACKERS weren't hassle enough, now we must contend with miscreants who want to pry into our Web-surfing habits and inundate us with viruses and ads. Intego's NetBarrier personal firewall protects you. New in version 2.0.2 are handy tools that block annoying advertising and protect privacy. And the program's price, \$50 (\$100 less than the cost of version 1.0), makes it an incredible bargain.

**Rating:** ★★★★★ 1/2

**Pros:** Comprehensive protection; spam filtering; cookie and banner-ad blocking.

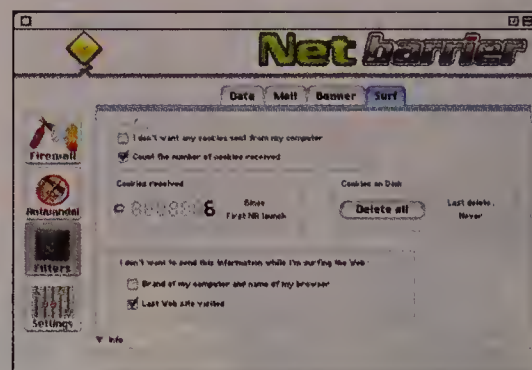
**Cons:** No log-analysis capability.

**Company's estimated price:** \$50

**Company:** Intego, 877/946-8346, [www.intego.com](http://www.intego.com)

NetBarrier keeps out intruders, blocks network attacks, and filters the sludge from your daily Internet stream. An array of preset configurations lets you set up the program with a single click, and in-depth settings give power users control over details.

NetBarrier can alert you when a site you're visiting attempts to retrieve personal information, such as your credit card number. The program logs these and other security events, though its log messages can be cryptic. Other features let you keep an eye on traffic levels and protocols. A new spam filter deletes annoying messages from your mail server, and an extensive cookie-monitoring feature lets you control who can send you cookies. The program can also selectively block banner ads and pop-up ad windows.



**Cookie Monster** NetBarrier keeps cookies under tight control, preventing companies from tracking your surfing habits.

## Macworld's Buying Advice

Less expensive and more capable than Symantec's Norton Personal Firewall (★★; *Reviews*, May 2001), and with an easily navigable interface, Intego's NetBarrier is the best personal firewall on the market today.—MEL BECKMAN

# DiskWarrior<sup>®</sup> has than



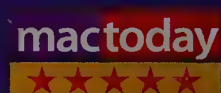
**1999 Macworld Editors' Choice Awards** Winner, Utility Software. "DiskWarrior is an excellent ax to add to your disk-repair and -maintenance arsenal. DiskWarrior's ease of use, speed, and new method of fixing disk problems make it a powerful disk-maintenance product."



**1999 MacUser Awards** Best Utility/Enabling Software. "For providing a new, easier to use, safer, and often more successful alternative to more bloated recovery applications, the judges felt DiskWarrior deserved top billing..."



**1999 Apple Design Awards** Most Innovative Product, Runner-up Best New Product



**5 Out Of 5 Stars** "Every Mac on the planet can benefit from DiskWarrior!"

**Repairs disk problems such as disks that won't mount, files you  
Now with DiskShield™ to prevent damage to your disks before it**

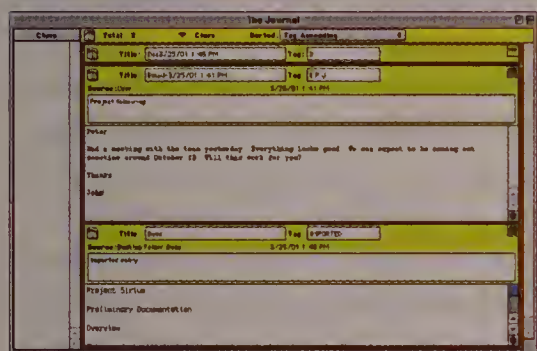


# Boswell 1.0

## Personal Text Organizer Short on Import Tools

**P**ICTURE AN ASSISTANT able to retrieve text for you in an instant: that's the premise behind Copernican Technologies' Boswell 1.0.2, a database in which you can store text clippings as large as 32K.

Boswell—which requires only 5MB of memory—was designed to be kept running, ready to accept or retrieve text. Boswell's electronic



**Personal Librarian** Fields in the header area above an entry describe its contents.

manual warns you not to try to learn the program by trial and error, and that's good advice—it took me two readings to familiarize myself with the terminology. In Boswell-speak, text blocks are called "entries," and they reside in a temporary storage area, the Journal, until they're transferred to the permanent Archive (once you put an entry there, you can't edit or delete it). Boswell's powerful cataloging functions make it easy to group related entries, so it's a snap to find, for example, all e-mail messages from your cousin Agnes that include the word *fruitcake*.

Alas, the only way to transfer text into Boswell is to cut and paste it, drag it from another application, or import it from a text file, so users who want the program to store all

**Rating:** ★★ 1/2

**Pros:** Powerful search capabilities; easy on memory.

**Cons:** Expensive; needs additional import tools.

**Company's estimated price:** \$130

**Company:** Copernican Technologies, 831/429-1775, [www.copernican-tech.com](http://www.copernican-tech.com)

of their Microsoft Word documents or Entourage e-mail messages have some tedious work in store.

### Macworld's Buying Advice

Though free utilities such as Sherlock let you search for files by content, having a separate, permanent record of your text has advantages. But as it is now, Boswell may be more trouble than it's worth.—FRANKLIN N. TESSLER

# won more top awards any disk utility ever.



Mac Today  
1998 Editors'  
Choice  
Awards

Outstanding Disk Rescue Product.  
"DiskWarrior belongs in the arsenal  
of every Mac owner!"



disk problems with zero effort."

MacHome - Five Apples,  
MACnificent Award  
"DiskWarrior is a deceiv-  
ingly simple yet incredibly  
powerful disk repair utility,  
which is able to fix your  
disk problems with zero effort."



"DiskWarrior comes  
to the rescue..."



MacHome 8th Annual  
Home Choice Awards

Best Utility. "Got lots of votes for  
repairing and preventing damage  
to hard disks so well. DiskWarrior 2.0  
is a quick solution to faster, more stable hard drives."

can't trash, and folders that have disappeared.  
occurs. Visit [www.Alsoft.com](http://www.Alsoft.com) for details.

Circle 141 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

[WWW.ALSOFT.COM](http://WWW.ALSOFT.COM)

**ALSOFT**

1-800-257-6381

© 2000 Alsoft, Inc.  
Alsoft, DiskWarrior,  
DiskShield are trade-  
marks of Alsoft, Inc.





# DAVE?<sup>TM</sup> It's totally cool!

How cool would it be for your Macs and PCs to become best friends? Share text and graphics files and PostScript printers across a network with no barriers. Get DAVE, the "totally cool" file share solution from Thursby Software. DAVE installs on your Mac. It's fast, secure and simple to use... perfect for sharing with Windows 95/98/Me/NT/2000 and soon, for Mac OS X.

Download a  
**FREE EVALUATION** today.



*The File Share Folks<sup>TM</sup>*

[www.thursby.com](http://www.thursby.com)



© 2001 Thursby Software Systems, Inc.

# Stata 7

*Statistics Program Offers Power at a Price*

**M**OST STATISTICS PACKAGES, such as SPSS's eponymous SPSS and SAS Institute's JMP, have entered the new millennium as interactive menu- and dialog-driven programs. In contrast, Stata is still reminiscent of a 1970s mainframe application. This otherwise powerful program relies on a procedural language for all interactions with your data, making for a substantial learning curve.

## A Different Approach

Stata does have a Mac interface, which it uses for relatively infrequent actions, such as setting preferences, opening files and windows, and printing. You'll spend most of your time in the Command window, typing and editing procedural instructions for displaying data, generating statistics, and creating graphs. The program routes all text output to a scrolling window; graphs appear in another window. Constructing and typing commands is no harder than it was with the early statistics packages, but this approach occasionally results in typos and syntax errors that users of menu- and dialog-driven programs never have to deal with.

To aid in the learning process, the program comes with 15 pounds

**Rating:** ★★½

**Pros:** Powerful; fast; extensible.

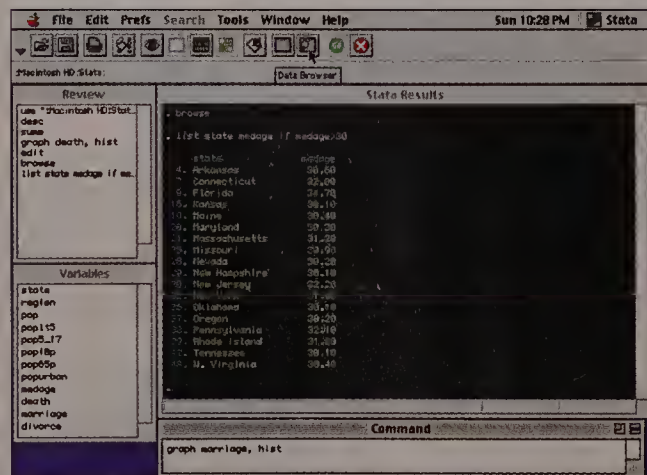
**Cons:** Procedural language is difficult to learn; graphing options lag behind the competition's; no OLAP support.

**Company's estimated price:** \$995

**Company:** Stata, 800/782-8272,  
[www.stata.com](http://www.stata.com)

of manuals, a series of noninteractive tutorials, and an extensive help system. Stata is extensible: you can modify the statistical procedures or create new ones. You can also capture a log of your session and use it as the basis for an executable *do-file* (a batch file used to automate a series of analyses).

Alas, Stata 7 lags behind the competition in graphics and formats, supporting only eight 2-D graph types (plus combinations). For a slightly lower price, SPSS 10 (★★★½; *Reviews*, March 2001) can produce more than twice as many graph types, lets you edit graphs, and can generate attractive 3-D graphs suitable for business reports. And while Stata offers an impressive array of statistics and options, it doesn't support OLAP (online analytical processing) cubes as SPSS 10 does.



**Type or Click** You can type procedure names, variable names, and options in Stata's Command window or choose them from the Review and Variables windows.

## Macworld's Buying Advice

Stata 7 isn't for casual users or novice statisticians. But if you're a full-time researcher or statistics professional who can devote the time needed to learn Stata, it's well worth considering. However, if you prefer a more interactive, menu-driven approach—one that doesn't rely on memorizing commands and syntax—you'll be happier with SPSS.—STEVE SCHWARTZ



## Lyra2

*MP3 Player Adds FM Tuner, Retains Bulky Hardware*

THE LATEST entrant in the already crowded field of portable MP3 players, RCA's Lyra2 has its share of cool features, including great sound and a new FM tuner. It comes with accessories that are often optional with



other players, including a tiny remote control for adjusting volume and directing playback; a power cable that plugs into your car's cigarette lighter; and a cassette-shaped adapter that lets you play music from the Lyra2 via a cassette deck.

Unfortunately, it also has more than its share of flaws. Transferring MP3s is a hassle: most MP3 players connect directly to the Mac, but with the Lyra2 you have to remove the 64MB flash memory card, insert it in the USB-based writer (which is almost as big as the player), and then use the bundled MusicMatch Jukebox software to transfer the files. Transfers are sluggish: a track that zipped into the Sonicblue Rio 600 in 12 seconds took 22 seconds to transfer to the Lyra2. And next to Apple's iTunes (which doesn't support the Lyra2), MusicMatch Jukebox is downright ugly.

### Macworld's Buying Advice

The Lyra2 is priced to compete with other MP3-FM combo players. But if you don't need FM, the \$220 Rio 600 is a better MP3 player—it's less expensive, faster, and supported by iTunes.—JIM HEID

**Rating:** ★★

**Pros:** Great sound; lots of goodies, including a remote control.

**Cons:** Slow transfers; external hardware is bulky.

**Company's estimated price:** \$299

**Company:** RCA, 800/336-1900, [www.lyrazone.com](http://www.lyrazone.com)

## 2-Minute Drill

*Unpolished Sports-Trivia Game*

ON ESPN's *2-Minute Drill* TV game show, sports celebrities bombard contestants with sports-trivia questions. Unfortunately, the CD-ROM of the same name fails to bring the fast-paced excitement of the show to your Mac's screen.

In the tradition of games such as Berkeley Systems' *You Don't Know Jack*, *2-Minute Drill* features clever audio commentary from the host of the TV series, Kenny Mayne. But all



we get from Mayne are non sequiturs; neither Mayne nor his celebrity guests actually read the questions aloud. That makes the photographs of the celebrities a bit silly, since their voices merely shout out the occasional irrelevant comment.

And although the questions are challenging, they started to repeat after only two games. Another reason this game lacks the excitement of the real thing is that there's no multiplayer mode. In addition, you are forced to deal with awkward key combinations as you rush to answer as many questions as possible in two minutes.

### Macworld's Buying Advice

With repeating questions, no multiplayer mode, and poor use of audio, *2-Minute Drill* is a weak sports-trivia game and a pale imitation of its TV counterpart.—JASON SNELL

**Rating:** ★★

**Pros:** Challenging questions.

**Cons:** No audio for questions; clumsy key combinations; no multiplayer mode; repeating questions.

**Company's estimated price:** \$40

**Company:** ESPN The Games, 888/782-4186, [www.espnthegames.com](http://www.espnthegames.com)

## SOFTWARE UPDATES

powered by  **versiontracker.com**

**Adobe Acrobat Reader 5.0**  
New version of PDF viewer

**Adobe PostScript printer driver 8.7.2**  
Works with Carbon applications

**America Online 2a**  
Beta OS X client for AOL

**Apple Mac OS X 10.0.1**  
Update adds USB drivers

**Apple Darwin OS 1.3.1**  
Open-source binary OS X core

**Connectix Virtual PC 4.0.2**  
Bug fix for PC emulator

**Dantz Retrospect client 1.0b1**  
Beta OS X backup client

**DIMM First Aid 1.0**  
Checks RAM compatibility with Apple's firmware update

**DivX Player 1.0b10**  
Beta DivX media player

**Fizzilla 4/17/01**  
Carbon version of mozilla.org's browser

**FoldersSynchronizer 2.1**  
Carbon version of backup shareware

**FWB Hard Disk ToolKit 4.5**  
Adds support for FireWire RAID

**GraphicConverter 4.0.7**  
Bug fix for Carbon version

**Kensington MouseWorks OS X 1.0b2**  
Beta OS X driver for mice and trackballs

**LaCie Silverlining Pro 6.4.1**  
Now iTunes-aware

**MacJanitor 1.0**  
Runs OS X system-maintenance scripts

**OpenOffice 04/11/01**  
Source code for Sun's productivity suite

**OpenUp 3.1**  
Cosmetic upgrade to OS X expander

**PowerLogix ProfilerX 1.0b1**  
Enables backside cache with OS X

**PrintToPDF 2.2.2**  
Bug fix for conversion shareware

**Sorenson Video 3.0b**  
Developer edition codec

**SoundJam MP Plus 2.5.3**  
Adds support for Rio player

**Timbuktu Pro X 1.0b**  
Beta OS X file-exchange software

**VST FireWire Updater 2.3**  
Adds support for DV capture

➔ **For these and other current updates, visit:**

[www.macworld.com/subject/updates](http://www.macworld.com/subject/updates)



# WhatTheFont™

Found a font you like in a magazine, but don't know its name?

WhatTheFont to the rescue! Scan the font and upload the image to myfonts.com. WhatTheFont shows you fonts that match. Best of all, this is a free service.



[www.myfonts.com](http://www.myfonts.com)

Circle 139 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

## Shopping for a digital camera?



Don't miss the great deals in the **SHOWCASE** section, starting on page 115 of this issue!

**Macworld. Get It Right.**

## ONLINE REVIEWS

# Macworld.com

### For these reviews:

[www.macworld.com/2001/02/reviews/online.html](http://www.macworld.com/2001/02/reviews/online.html)

LINK

### Online scheduling applications

- ★★★ MyPalm
- ★★★★ ScheduleOnline
- ★★★ Yahoo Calendar

### Racing wheel

- ★★★½ Saitek R100 USB Wheel

### Professional monitor

- ★★★★ Personal Calibrator V

### USB microphones

- ★★½ Andrea Electronics NC-7100
- ★★★★ Parrott Aruba
- ★★★★ Parrott Caribbean
- ★★★★ Parrott Jamaica
- ★★★★ Plantronics DSP-100
- ★★★½ Plantronics DSP-300
- ★★★★ Plantronics DSP-400
- ★★★★ Plantronics DSP-500
- ★★★ Telex H-531
- ★★★½ Telex H-831
- ★★½ Telex M-560

### Color laser printer

- ★★★½ HP LaserJet 4550N

### Teaching software

- ★★★ ThemeWeavers: Animals
- ★★★ ThemeWeavers: Nature

### USB MIDI controller

- ★★★½ Tascam US-428

### Music-assembly software

- ★★★½ Phrazer 1.0

### Portable photo printer

- ★★★★ Olympus Camedia P-200

### Screenwriting software

- ★★★★ Final Draft 5.0

### Puzzle-creation software

- ★★★★ Puzzle Power 3.1

### Video-editing software

- ★★½ VideoGenetics

### File server

- ★★★★ Snap Server 4100

### Reviews You Can Trust

- OUTSTANDING: ★★★★★
- VERY GOOD: ★★★★
- GOOD: ★★★
- FLAWED: ★★
- UNACCEPTABLE: ★

RATINGS



# The Game Room

Yo ho, yo ho, a pirate's life for me! Ever since I was a wee lad, I've been obsessed with pirate stories. This hasn't abated in my adult life—much to my therapist's fascination, I'm sure. So when I heard that Aspyr Media was publishing a Mac version of LucasArts' latest Guybrush Threepwood adventure, *Escape from Monkey Island*, the Blackbeard in me wildly gyrated his hook and peg leg with joy.

It's been a long time since a top-shelf adventure game made it to the Mac. Adventure games of any kind are a rare breed these days, even on PCs, but the industry-wide dearth hasn't diminished LucasArts' skill at crafting them. *Escape from Monkey Island* is a rollicking good time, and thanks to recent advances in graphics technology, it's a feast for the eyes as well.

*Escape from Monkey Island* is the fourth adventure game to star Guybrush Threepwood, a wannabe pirate and an unlikely hero if ever there was one. Although he's a bit daft, he means well. And as the story unfolds, you'll find that even though Threepwood may have a bit of Walter Mitty in him, he's not just a daydreamer—he's a doer, but in his own bumbling, incompetent sort of way. In fact, he's already won the hand of the beautiful and plucky Elaine Marley-Threepwood, resident governor of Mêlée Island—a veritable pirate haven.

Elaine and Guybrush return to Mêlée Island after a three-month honeymoon to discover that Elaine has been declared legally dead. Elaine's gubernatorial seat is up for grabs, and challenger Charles L. Charles is making his play for the position. Charles is a new—yet disturbingly familiar—presence in town. Guybrush and Elaine soon discover that proving Elaine's identity and health status is more difficult than they thought, and that their old nemesis, the dread (and undead) pirate LeChuck, is behind recent events.



## Yo Ho Ho and a Venti Latte!

What makes this adventure tale so engaging is that it's firmly rooted in situations that folks can identify with today. Threepwood's arch-nemesis LeChuck may be a supernatural force straight from the flaming bowels of heck, but Guybrush needs to solve all sorts of mundane—and riotously funny—problems in his attempt to vanquish him. Threepwood and his band of brigands square off against the most fearsome menace on the high seas: lawyers. Threepwood

also goes head-to-head with a real estate tycoon, a thief with no nose, a prosthetics salesman, and perhaps the most frightening of all, a bucktoothed barista at the local Starbuccaneers coffee shop. That's only the tip of the iceberg, mateys—to tell you any more of the story would ruin the surprise.

Throughout, the game is rife with well-written dialogue superbly delivered by top-notch voice actors. And an engaging soundtrack accompanies the action; contrary to my habit, I didn't scramble to turn off the music after the first few minutes.

Don't let the brightly colored, cartoonish animation fool you, by the way—kids may enjoy this title, but it's definitely made for adults (the game is recommended for teens and adults). If the topical humor I described doesn't make that clear enough, consider that some of the puzzles in this game are tougher than a six-month-old sea biscuit.

*continues*



**TIPS** Avast ye! If you can't find your sea legs in *Escape from Monkey Island*, try these tricks:

- Typically, anything Guybrush can pick up is useful, so don't be afraid to grab whatever you find. He has amazingly voluminous pants, apparently, because that's where he keeps everything.
- Don't be afraid to talk with others.

Often, conversations will get you somewhere, even if at first you feel as though you're wasting your time.

- Can't figure out what the old drunken sailor's birthday balloon is good for? Challenge the dart-throwing champ to try to hit it.

- Getting out of the bank vault involves wedging open the door frame. Hint:

sponges swell when soaked.

- Once you get the directions to Pegnose Pete's lair in the Mystes O' Tyme Marshe, write them down. This will make navigation a lot easier. Otherwise you'll be traveling by raft, looking at the map to see where you are, adjusting your course, and trying again until you get there.

### Simpler Than a Slipknot

*Escape from Monkey Island*'s user interface is intuitive and straightforward. The game consists of 2-D illustrated backgrounds populated by 3-D characters and objects. The 3-D animation is excellent—objects and characters move realistically and even cast shadows.

You direct Guybrush using the arrow keys on your keyboard, and you can make him look at, use, or store various objects, as well as talk with characters. When Guybrush needs to address someone, you're presented with a branching menu containing various comments, queries, and replies, depending on the context.

The game is cleverly designed, so if you haven't yet explored a crucial area or gotten a key piece of information, your interaction with other characters in the game may subtly change so as not to give the story away. This level of detail is refreshingly complex and challenging.

*Escape from Monkey Island* is also nicely configurable—you can set keys to execute a variety of commands, tweak audio and video settings to your liking, and save the game at any point.

### Four Sheets to the Wind

The 3-D characters and objects in *Escape from Monkey Island* are rendered using OpenGL, which can tax a Mac's graphics hardware. Aspyr recommends running the game on a Mac with an ATI Rage Pro or comparable graphics card and at least 64MB of RAM.

Westlake Interactive, the company that ported the game from the PC, did a nice job on the conversion. Installation was a breeze, and the game performed reliably, although it did crash once or twice on my 450MHz Power Mac G3. Interestingly, it ran perfectly on my 333MHz PowerBook G3, which is slower and equipped with less-formidable video hardware. The game's only apparent technical deficiency is a prodigious appetite for space on your hard disk. It needs 500MB in "normal" installation mode and 1GB for the full installation, and you have to keep the CD in the drive at all times.



### More Fun Than an Isle o' Monkeys

If *Escape from Monkey Island* has any shortcomings, it's that the game often depends on self-referential jokes and on characters who were introduced in the series' first three games—which you probably haven't played, unless you have a PC lying around. If you aren't already a *Monkey Island* fan, you'll occasionally have that somewhat

uncomfortable feeling of not being in on the joke. But that does little to diminish the otherwise excellent story.

As a single-player adventure game, *Escape from Monkey Island* can be played only once. But it's vast, spanning two CDs in all, and you can count on getting days—if not weeks or months—of challenging fun out of it, depending on how much time you invest. Like a long, engrossing novel, *Escape from Monkey Island* would be a good game to be stranded with on the proverbial desert island.

### Macworld's Buying Advice

*Escape from Monkey Island* is an exemplary modern adventure game, superbly executed by Westlake and Aspyr. If you find the adventure genre appealing and have a bit o' the pirate in ye, then set sail for *Monkey Island*, by hook or by crook. **m**

If you ever hear PETER COHEN, senior editor at MacCentral, suddenly shriek "Yaar! Weigh anchor and hoist the mainsail!" while brandishing a cutlass, be very patient—he's working out a few issues.

Got a comment? Visit [www.macworld.com/columns/gameroom/](http://www.macworld.com/columns/gameroom/)

#### ESCAPE FROM MONKEY ISLAND

Rating: ★★★★★ 1/2

Company's estimated price: \$45

**Pros:** Engaging story; terrific graphics; many satisfyingly challenging puzzles.

**Cons:** Occasionally too self-referential; not for players with short attention spans.

**Company:** Aspyr Media, 888/212-7797, [www.aspyr.com](http://www.aspyr.com)



# Feel What It Is To Be Immortal.

Immerse yourself in the legendary  
World of Darkness® and build your own  
tales of horror. Then join thousands  
of Vampire: The Masquerade® players  
online, sharing and hosting the  
twisted adventures you have created.  
Let the feeding frenzy begin...

## VAMPIRE THE MASQUERADE REDEMPTION™



Relive the pen-and-paper role-playing experience with the revolutionary Storyteller system, creating and hosting your own online adventures.



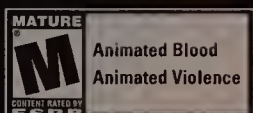
Survive as a vampire across 800 years in the legendary World of Darkness... where creatures of the night reign supreme.



Interact with more than 70 non-player characters in four cities: medieval Prague and Vienna and modern London and New York.



## Now Available!



ACTIVISION®



Vampire: The Masquerade, White Wolf and World of Darkness are registered trademarks and Vampire: The Masquerade—Redemption is a trademark of White Wolf Publishing, Inc. ©2000 White Wolf Publishing, Inc. ©2000 Nihilistic Software, Inc. ©2000 Activision, Inc. All Rights Reserved. Activision is a registered trademark of Activision, Inc. and its affiliates. All other trademarks and registered trademarks are the property of their respective owners. Manufactured and marketed by Infogrames, Inc., New York, New York.

Circle 121 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)







Before You  
Buy or  
Upgrade,  
Find Out  
What Really  
Affects  
Your Mac's  
Performance

DOES

MHz

MATTER?

**Speed.** Whether you need a new Mac that'll give you more of it or you want to wring as much as possible from the machine you've got, speed is what it's all about. If you've ever waited and waited for a Microsoft Excel calculation to finish or for an Adobe Photoshop filter to appear, pixel . . . by . . . pixel, you know what we're talking about.

It's easy to look at the clock speed of a Mac's processor—measured in megahertz—as the prime indicator of the computer's speed. But your hard drive, your RAM, your video card, and many other parts of your Mac also affect its speed.

That MHz number in your Mac's name *does* matter—but it's far from the only factor. To gauge how different components can optimize a system's performance, we enlisted the expertise of Macworld Lab. When you see what we found, you'll never look at MHz the same way again.

BY JONATHAN SEFF / PHOTOGRAPH BY JAMES PORTO



## Quest for Speed

Your processor can be thought of as your Mac's brain, but a lot of other hardware inside your computer helps to process and transfer information. Each piece can significantly affect your system's overall speed. (See "Your Mac's Inner Life" for how everything works together.)

Your Mac can read and write data much faster to RAM than to your hard drive, so the more RAM you have, the more data your Mac can keep at the ready. Photoshop, for example, places into RAM as much information as possible about the images it's editing. When there's no more real memory available, the rest of the data is stored on the hard drive. If you've ever edited a large image in Photoshop on a system with very little RAM, you know that when the hard drive comes into play, you must sit and wait.

Though the hard drive can't move data as quickly as RAM, it still has the ability to affect performance in a major way. Regardless of its size, a faster hard drive will certainly speed

up your work when memory-intensive applications such as Photoshop run out of RAM and begin storing data on the disk. And many applications—FileMaker is one example—spend most of their time reading and writing data on the hard drive.

Then there's the video card, which dramatically affects image-intensive features such as scrolling speeds, screen redraws, and the frame rates of 3-D action games.

Which of these subsystems are most vital for you to consider when you're shopping for a new system or upgrading your current one? The answer depends on how you use your Mac.

## The Processor

The Mac Classic II that Apple sold ten years ago had a 16MHz processor. Today's fastest Power Mac G4s run at 733MHz. But does multiplying megahertz by 45 *really* mean 45 times the speed? When is an incremental boost in processor speed worth its price? When is a dual-processor system a prudent choice?

To analyze the power of the processor, Macworld Lab tested several models: single- and dual-processor 533MHz Power Mac G4s; a single-processor 733MHz Power Mac G4; and a 450MHz blue-and-white Power Mac G3, with and without a PowerLogix G4 upgrade card.

**Basic Tasks** For most basic tasks, such as starting up your Mac and using the Finder, a faster processor won't gain you anything. However, for a few basic, processor-intensive tasks, you do benefit: unstuffing a file in our trials went 7 percent faster on the 733MHz G4 than on the 533MHz G4, and encrypting a file using Apple's Encrypt command was about 12 percent faster. (See our test results in "Variations on a Mac.")

In Microsoft Office tests, the power of a faster processor was evident—the 733MHz G4 beat the 533MHz model in all five of those tests. Most impressive: the faster processor was worth a 21 percent edge in scrolling through an Excel document.

**Graphics and Media** When it came to Photoshop, the 733MHz Power

## Variations on a Mac

We chose one Mac system as our primary guinea pig: a Power Mac G4/533 with 128MB of RAM, a 7,200-rpm Maxtor internal ATA-100 hard drive, an ATI Radeon AGP graphics card, and Mac OS 9.1 installed. We then varied components to see how each part affected the system's overall speed. We also tested a Power Mac

Best results in bold. Shorter is better. Longer is better.	SPEEDMARK	MICROSOFT OFFICE 98					QUAKE III	
	Overall Score	Word Document Scroll	Word Search and Replace	Word Autosummarize	Excel Calculate Spreadsheet	Excel Document Scroll	Install	Frames per Second
Apple Power Mac G4/533	169	:20	:53	:31	:42	:14	2:45	59
with 768MB RAM	165	:20	:52	:31	:42	:14	2:45	59
with 5,400-rpm IDE drive	171	:19	:54	:31	:39	:13	2:45	59
with two 10,000-rpm Ultra 160 SCSI drives	178	:19	:51	<b>:30</b>	:38	:12	2:44	60
with ATI Radeon PCI graphics card	166	:22	:54	:31	:46	:14	2:45	54
with ATI Rage 128 Pro AGP graphics card	165	:20	:54	:31	:40	:16	2:45	40
Apple Power Mac G4/533 DP	172	:20	:54	:31	:40	:13	2:48	59
Apple Power Mac G4/733	<b>183</b>	<b>:16</b>	<b>:50</b>	<b>:30</b>	<b>:34</b>	<b>:11</b>	5:31	<b>67</b>
Apple Power Mac G3/450	128	:21	1:22	:38	:49	:19	<b>2:39</b>	33
with 450MHz G4 upgrade card	129	:20	1:21	:37	:49	:19	2:41	35
		Better ▶	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	Better ▶

Speedmark 2.1 scores are relative to those of a 350MHz iMac (1999), which is assigned a score of 100. Quake frame-rate scores are in frames per second; all other scores are in minutes:seconds. The 18 real-world tasks used in our testing, all of which use stock applications, are part of Speedmark 2.1. (In addition to our Speedmark tests, we ran a Maxon Cinema



Mac was only negligibly faster at most of the tasks than the 533MHz system (see “Putting Photoshop to the Test”). Where the processor speed really seemed to make a difference, however, was when we converted an RGB image to the CMYK color space. The 733MHz Mac did the task 30 percent faster.

In Mac OS 9, an application that is written to take advantage of both processors (such as Photoshop) can spin off tasks to the second processor. In Mac OS X, applications native to OS X can run on either processor, and tasks use the processors more equally (see “Double Vision,” November 2000).

single-processor 533MHz machine, and it cut more than a third off the 733MHz Mac’s time.

In tests of software not optimized for multiple processors, however, the dual-processor Mac offered little or no advantage.

**G3 versus G4** Another choice you have as a Mac user is between the G3 processor used in Apple’s consumer systems (the iMac and iBook) and the G4 processor used everywhere else. The two are very similar, except for AltiVec—Apple

calls it Velocity Engine—on the G4. It gives G4-savvy applications (Photoshop is one) an extra boost in speed.

We explored the differences between the G3 and G4 by pitting a 450MHz blue-and-white Power Mac G3 system against itself—with a 450MHz G4 upgrade card inside.

The two configurations were neck-and-neck in most Finder and Office tests; however, the G4 chip came through on features designed to take advantage of AltiVec. Our upgraded *continues*

## The more RAM you have installed, the more DATA your Mac can keep **AT THE READY.**

Audio and video applications also demand processor power—as our MP3 and video-export tests demonstrated.

Games can also be very processor-intensive. In our Quake III tests, the 733MHz system displayed 14 percent more frames per second than the 533MHz machine. The result was more-fluid game animations and a far more enjoyable gaming experience.

**The Dual-Processor Difference** Mac users can once again choose a computer with two processors.

In our tests, the dual-processor 533MHz model showed its best results, predictably, in Photoshop. In four of six tests, the dual-processor system beat its single-processor cousin, shaving more than 20 percent off the time needed to complete a Gaussian blur, for example.

The 3-D application Cinema 4D XL, from Maxon, also takes advantage of multiple processors. When rendering a model—a very processor-intensive task—the dual-processor Mac cut nearly half off the time of the



G4/733; a dual-processor Power Mac G4/533; and a Power Mac G3/450, with and without a 450MHz G4 upgrade card. To isolate processor differences, we used the 533MHz system’s hard drive, graphics card, and RAM in tests on the dual-processor G4 and the 733MHz G4 systems.

GENERAL USE						INTERNET			MULTIMEDIA		
Duplicate 100MB File	Open Multiple Folders	Encrypt 100MB File	System Startup Time	Unstuff File with Stuffit Expander 5.5	Scroll PDF File	100MB FTP Download from Server	MS Outlook Express 5 Download E-Mail	MS Internet Explorer 5 Browser Test	SoundJam 2.5.2 MP3 Encode	Render iMovie 2.0.1 File As QuickTime	Cinema 4D XL 6.3 Model Render
:09	:19	:33	:57	2:19	:35	:42	:43	:34	1:59	1:55	13:10
:08	:19	:32	1:01	2:22	:37	:48	:41	:33	2:00	1:50	13:13
:10	:18	:35	:58	2:19	:37	:40	:42	:34	2:00	1:51	13:13
:05	:18	:31	1:22	2:13	:35	:39	:41	:34	2:01	1:51	13:18
:08	:19	:33	:59	2:20	:37	:42	:43	:35	1:59	1:50	13:12
:08	:19	:32	:56	2:20	:39	:40	:43	:33	2:01	1:49	13:13
:08	:19	:32	:54	2:19	:36	:48	:41	:33	2:00	1:47	6:45
:09	:18	:29	:55	2:10	:34	:38	:40	:33	1:21	1:33	10:21
:18	:21	:48	1:10	3:03	:45	1:10	:51	:43	2:59	2:19	16:42
:18	:21	:41	1:30	2:58	:47	1:08	1:03	:42	1:55	2:22	16:05
◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better

4D XL test to gauge 3-D performance.) For more information about Speedmark, visit [www.macworld.com/speedmark](http://www.macworld.com/speedmark).—Macworld Lab testing by Jason Cox and James Galbraith



# YOUR MAC'S INNER LIFE

*A Lot More Goes On Inside Your Mac Than You Know. Take a Peek.*

The inside of your Mac is complicated: in addition to your processor, RAM, and hard drive, there are dozens of subprocessors and controllers that ensure smooth operation. The great unsung hero of your Mac is the motherboard—the large circuit-card platter that houses, powers, and allows communications among all the components. (See “Speed Racer.”)

## The Processor

Most basically, computers take in data, manipulate it, and then either output the result or store it for you to work on later. The part of your Mac responsible for the most important step—the manipulation of data—is the processor, your Mac’s “brain.”

A processor isn’t a monolithic calculation machine. Rather, it’s made up of many execution units working together to run your applications. Some execution units do the actual computations that result in Microsoft Excel calculations or Adobe Photoshop blurs, for example. Others figure out which instructions to follow next and coordinate efforts among the execution units. Still others are responsible for connecting the processor to the outside world—allowing the processor to talk to the motherboard and its physical components.

All these components on a processor work in lockstep, based on the processor clock, which sets its internal rhythm. The clock is a metronome that synchronizes the workings of all the different execution units—some units may take five beats, others three, and so on. The clock’s speed is described in terms of *MHz* (megahertz), or millions of cycles

per second. For example, the processor clock of a 733MHz G4 processor “ticks” 733 million times a second.

Even a state-of-the-art processor such as the PowerPC G4 isn’t all-powerful. It doesn’t normally issue direct commands to the Mac’s other components—say, telling your monitor to draw a letter on the screen. A processor usually just reads data sitting in your Mac’s RAM, manipulates that data (based on the instructions given by your software),

connects for peripherals such as hard disks and CD/DVD drives, and external connectors for audio, USB, FireWire, and Ethernet.

But the motherboard is more than a power socket and hardware organizer. As the conduit for communication between your Mac’s many systems, it allows the processor to send its commands to the other components, and it lets those components communicate with the processor and each other.

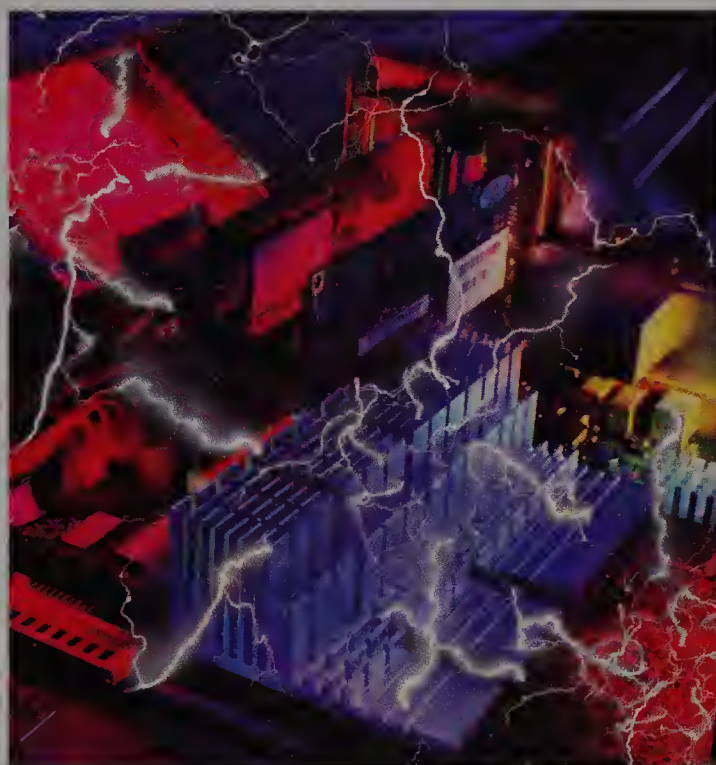
Your processor tells the EIDE controller on the motherboard what data to burn in your CD-RW, for example, and that controller manages the CD-RW’s burning process.

## Lines of Communication

Of all the tasks your Mac’s motherboard must perform, perhaps the most difficult is allowing all your Mac’s parts—which run at different speeds—to communicate with one another. The lines of communication are called *buses*, and each has its own clock speed (measured in MHz) and *width* (how many bits of data it can transmit in one tick of the clock).

Every computer motherboard has *bridges* that act as go-betweens for the many different buses. Most of the Mac’s peripheral systems—USB, FireWire, and IDE, to name a few—are connected to the PCI bus, which runs much more slowly than the system bus (the processor and the memory). Data from the Mac’s slower components (such as the hard drive) travels across the PCI bus and from there via bridge to RAM.

Thanks to the bridges, the processor is more efficient—it rarely has to waste



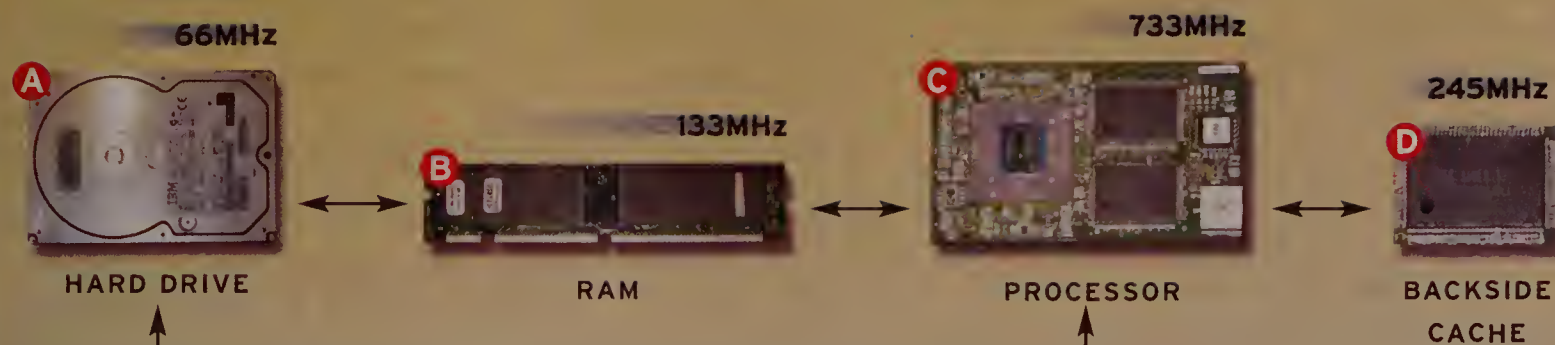
and writes the results back into RAM. Endless variations of these steps, coupled with the movement of finished work from RAM to the hard drive or the monitor, result in the productive Mac you know and love.

## The Motherboard

The motherboard provides physical connections and power for all of the components on it, which are numerous: RAM, processors, ROM chips, modems, AirPort cards, power controllers, PCI and AGP card slots, ATA and EIDE con-



## Speed Racer



To open a file—a Photoshop image, for example—your processor **C** tells your hard drive **A** to send those bits of data into RAM **B**. To apply a blur filter, a pixel-by-pixel operation that repeats the same instruction set over and over, the processor grabs the image from RAM and then stores the reusable code in the much faster backside cache **D**. After going back and forth between the speedy processor and backside cache, the processed data is dumped back into RAM and sent to the hard drive.

ticks of the clock waiting on a slow component. The processor can fire commands off to a bridge and then move along to another task. For example, the processor can send a block of data to the video card, and the video card can collect the data later, when it is ready, all because the bridge is acting as the conduit. Many of the components

than the Mac's 133MHz RAM, yet the machine is incredibly efficient. This is accomplished with a *backside cache*.

The frontside bus is the channel between the processor and the main memory, but that bus is slow. So, engineers created a special backside bus that runs only between the processor and the cache, a small amount of mem-

built into the processor itself. It contains 32K worth of cached instructions for the processor, and 32K of data that the processor will use to execute those instructions. The L1 cache, which runs at the same speed as the processor, contains the stuff your processor will work on during the next few nanoseconds.

Since the introduction of the G3, PowerPC Macs have also had an L2 cache, which tends to run a bit slower than the processor, but because it's connected directly to the processor, it still runs much faster than system RAM. On cur-

An efficiently running Mac is one in which the processor is working on something  
**ALL THE TIME.**

on the motherboard have their own RAM for collecting data before it is sent to or received from the processor in one efficient burst.

### Caches

In an efficiently running Mac, the processor is working on something all the time. If the processor has to wait idly for data to arrive from RAM, that inefficiency will translate to a slowdown. The only way to ensure that the processor is always busy is to have all the RAM run at the same speed as the processor. Unfortunately, equipping all Macs with such speedy RAM would be much too expensive—and that's where cache RAM comes in.

The 733MHz Power Mac G4 processor operates five-and-a-half times faster

ory manufactured to run many times faster than normal RAM.

Backside caches improve performance in a very elegant way. Your Mac's processor receives repeated commands and data about 90 percent of the time. Storing that information in an ultrafast cache reduces the number of times your Mac must read from the far slower RAM on the motherboard.

Sooner or later, the processor will need something from main memory that isn't in the cache—called a *cache miss*. When this happens, the processor retrieves what it needs from the RAM on the motherboard.

The latest Power Mac G4s have three layers, or levels, of backside cache. The first layer, called level one (or L1) cache, is

rent G4 Macs, the L2 cache has been integrated into the processor itself. However, these Macs have been bolstered with even more cache—an L3 cache that runs at one third of the processor's speed. That may sound a bit poky, but using the L3 cache is more efficient than retrieving information from RAM on the motherboard.

### Working Together

All of your Mac's subsystems work together to help the processor run more efficiently, with the motherboard serving as the great negotiator and communicator among them all. Yes, the processor is a critical component, but it's only one element of your Mac's complex inner life.—DAVID READ



G4 system performed a Gaussian blur in Photoshop in half the time it took the original system, and it also rendered lighting effects faster. In MP3 encoding, the upgraded system shaved 36 percent off the G3's time.

**The Bottom Line** Just look at the difference between similarly configured Power Mac G4s, one running at 533MHz, the other at 733MHz: the latter model has a clock speed nearly 40 percent faster (and at press time, it cost roughly \$500 more). Yet in most of our tests, it provided a less-than 10-percent improvement, and in only a handful did it make a difference of 20 percent or more.

Faster or multiple processors generally mean faster computers, but the difference won't matter much unless you spend most of your time in a 3-D, graphics, or video-editing application. Even then, RAM might give you more

prices fluctuate, lately they've been as low as prices on the stock market. So when does adding RAM make sense? To find out, we retested our 533MHz G4 after increasing its puny 128MB of RAM to a total of 768MB.

in test results. The system's performance in our iMovie test was slightly better with the additional memory, but scores in our Cinema 4D XL, SoundJam, and Quake tests were essentially unchanged.

## For a Photoshop professional, massive amounts of RAM and two G4 processors are a **POTENT DUO.**

**Basic Tasks** In most general-use areas, adding RAM to our test systems made little difference. However, it's important to note that the more RAM you have, the more applications you can run simultaneously. That's not technically a speed gain, but being able to switch between open applications instead of having to quit some before launching others certainly helps productivity.

Mac OS also offers built-in virtual memory; turning it on sets aside part of your hard drive to be used as memory when your RAM fills up. But hard drives are slower than RAM. If you rely on virtual memory to keep all your favorite applications open, adding RAM instead will dramatically improve your system's responsiveness.

**Graphics and Media** In Photoshop work, you manipulate a lot of information. Every time you run a filter, that filter must analyze and modify every last pixel of your image. The more image information you can keep in RAM, the faster Photoshop runs.

So when we added 640MB of RAM to our test system, Photoshop began to fly. Rotating and applying lighting effects to an image went twice as fast as they did on the original 128MB system. The extra RAM tripled the system's scores in the Gaussian Blur and Unsharp Mask tests. And resizing an image was four times as fast with the added RAM.

Outside of Photoshop, additional RAM didn't make much difference

**Dual Processors** We also added RAM to our dual-processor 533MHz and single-processor 733MHz Power Mac G4s, and we tested them with Photoshop. The result was an impressive display of Apple's dual-processor technology: the dual-processor system was clearly faster than the 733MHz system in four of our six tests.

Massive amounts of RAM and two G4 processors are the most potent combination any Photoshop professional could want.

**The Bottom Line** If you're a Photoshop pro, RAM is where it's at. We saw tremendous gains when we added memory, especially on the dual-processor G4. If Photoshop is not your main application, more RAM won't bring huge speed gains, but it can help if you run many applications simultaneously or rely on virtual memory.

### The Hard Drive

Writing to or from a hard drive has traditionally been a performance bottleneck for Macs. Processors had to wait around for slow hard drives to provide them with data. The sure-fire way to speed up a Mac II was to buy a speedy new hard drive.

We tested three hard drive configurations in our 533MHz G4: its built-in 7,200-rpm Maxtor ATA-100 drive; a slower 5,400-rpm Western Digital ATA-66 drive; and a RAID array with two 36GB Seagate 10,000-rpm drives connected via Adaptec's 39160 Ultra 160 SCSI card.

**Basic Tasks** The 5,400-rpm drive and 7,200-rpm drive were evenly

### WHAT MATTERS WHEN?

Mac Tasks	Critical Components
General use	RAM
Microsoft Office	RAM
Adobe Photoshop	RAM, dual processors
Digital video	Processor, hard drive, RAM
Digital audio	RAM, hard drive
3-D	Processor, RAM
Games	Video card, RAM

bang for your buck. If you do a lot of work with graphics, the horsepower of a faster processor will help, but an *extra* processor will help even more—if the applications you use are multi-processor-aware, and especially if you're using Mac OS X.

### RAM

The more RAM you have, the more information you can store there. That means fewer trips to your relatively slow hard drive. And although RAM



# Putting Photoshop to the Test



Few applications expose a Mac's deficiencies better than Adobe Photoshop. We ran a series of Photoshop tests on each of our various Mac configurations. Since RAM is a major factor in Photoshop performance, we tested each system twice—once with 128MB of RAM and a second time with 768MB.

Best results in bold. Shorter is better.	RAM	ADOBE PHOTOSHOP 6.0.1					
		Gaussian Blur	Unsharp Mask	Resize	RGB to CMYK	Rotate Canvas	Render Lighting effects
Apple Power Mac G4/533	128MB	:16	:15	:08	:23	:18	:13
	768MB	:05	:05	:02	:20	:09	:06
with 5,400-rpm IDE drive	128MB	:27	:23	:18	:24	:28	:15
	768MB	:05	:05	:02	:20	:09	:06
with two 10,000-rpm Ultra 160 SCSI drives in striped RAID array	128MB	:13	:12	:05	:23	:15	:11
	768MB	:05	:05	:02	:20	:08	:06
with ATI Radeon PCI graphics card	128MB	:15	:15	:08	:23	:19	:15
	768MB	:05	:05	:02	:20	:08	:06
with ATI Rage 128 Pro AGP graphics card	128MB	:14	:13	:08	:23	:13	:15
	768MB	:05	:05	:02	:21	:08	:06
Apple Power Mac G4/533 DP	128MB	:12	:12	:08	:23	:16	:12
	768MB	:03	:03	:01	:20	:05	:04
Apple Power Mac G4/733	128MB	:15	:14	:08	:16	:17	:03
	768MB	:05	:05	:01	:12	:07	:06
Apple Power Mac G3/450 with 128 RAM		1:02	:32	:18	:36	:36	:38
with 450MHz G4 upgrade card		:31	:31	:17	:37	:36	:29
		◀ Better	◀ Better	◀ Better	◀ Better	◀ Better	◀ Better

All scores are in minutes:seconds. We used a 50MB file and tested each system with a default system disk cache, virtual memory disabled, and displays set to 24-bit color and 1,024-by-768-pixel resolution. We set Photoshop History to Minimum. In tests with 768MB RAM, we set Photoshop's memory partition to 250MB; with 128MB of RAM, we set it to 75MB.—Macworld Lab testing by Jason Cox and James Galbraith

matched in most of our Finder tests, but the RAID array was clearly faster than either. With this configuration, our system duplicated a 100MB test file in just over half the time it took the other drives.

**Graphics and Media** Photoshop likes lots of RAM, but once it runs out, it has to write data to the disk—and the faster the hard drive, the better. The RAID array had the fastest times, beating our 7,200-rpm drive on nearly every front. Resizing an image went nearly 40 percent faster on the RAID system. The 5,400-rpm drive was dead last in all our tests.

**The Bottom Line** For most common tasks, the speed of your hard drive won't make much difference. As our testing showed, a hard drive's effect is most apparent in disk-intensive programs such as Photoshop.

The advantage of a faster drive applies most to capturing and editing

digital video and audio—tasks that involve gigantic amounts of data. For example, if you're a musician, you'll want a speedy drive so you can simultaneously play back multiple audio tracks.

But the cost of our high-end RAID system (\$480 for a SCSI card plus \$1,100 for two 10,000-rpm drives) makes it a serious investment for a graphics professional. Before you buy such a drive, consider adding a lot of RAM and a faster processor instead.

## The Video Card

A Mac's video card draws everything you see on its monitor. Today's video cards are blazing fast, and most are designed to draw complicated graphics, such as the 3-D graphics in cutting-edge games, as fast as possible. To see how different video cards affected performance, we tested the G4/533 with its installed ATI Radeon AGP card and

with an ATI Rage 128 Pro AGP. (We also tried it with a Radeon PCI card.)

**Basic Tasks** Most of these results weren't affected by the change in video cards. But for scrolling—which relies heavily on the power of your video card—the faster Radeon card clearly outperformed the Rage 128 Pro. The Radeon was 10 percent faster at scrolling a PDF file and 12 percent faster at scrolling in Excel.

**Graphics and Media** The Radeon has more RAM and is newer than the Rage 128 Pro, and that hit home in our gaming tests. In our Quake test, the Rage 128 Pro drew about 40 frames per second, compared with Radeon's 59 frames, which made for noticeably smoother game play.

**The Bottom Line** A better graphics card will speed up scrolling and support monitors with higher resolutions. If you are a graphics profes-



sional, improved scrolling speeds will save you some time. But the best reason to upgrade your video card is to play games on your Mac.

### Other Factors

Several other things also affect performance. You can't upgrade your

system bus, and most people won't upgrade their DVD- or CD-ROM drives, but each of these has bearing on a Mac's speed.

**System Bus** A *bus* is a line of communication between your Mac's components. The system bus connects the processor to the RAM.

Essentially, the faster your Mac's system bus, the faster your Mac's processor can work.

The latest Power Mac G4s feature a system bus that runs at 133MHz. The system bus on the PowerBook G4, G4 Cube, and iMac runs at 100MHz. iBooks have a slower 66MHz system bus.

**Optical Drives** A major quirk our tests revealed was that the 733MHz G4 took twice as long as our 533MHz G4 to install Quake from a CD. That's because the 733MHz model we tested uses Apple's new DVD-writing SuperDrive, which reads CD-ROMs much more slowly than the CD-R drive in the 533MHz G4.

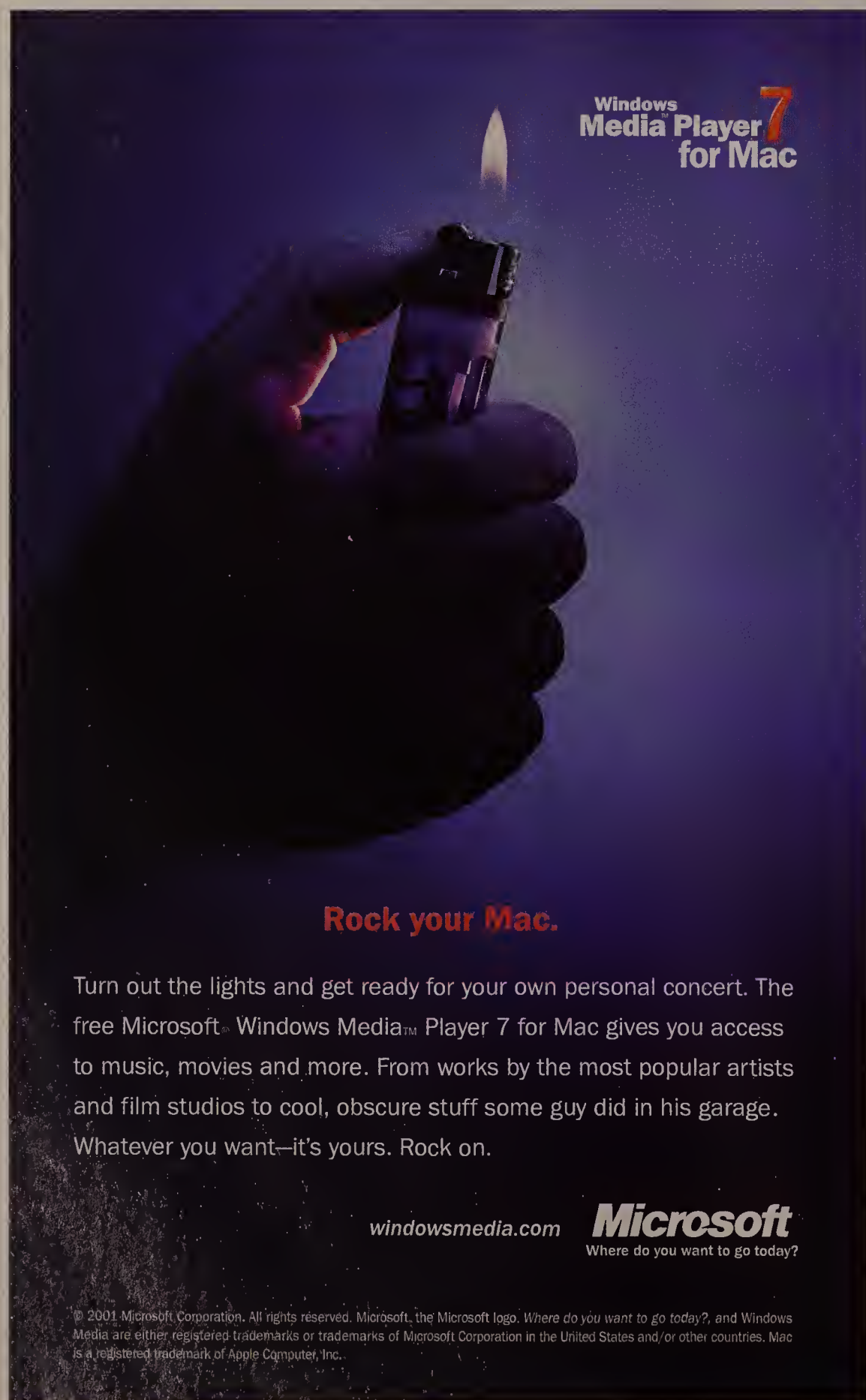
### The Last Word

Processor speeds measured in hundreds of megahertz are flashy, easy-to-compare numbers, but they don't tell the whole story. Your Mac's other components also have a lot to do with how fast it runs.

How you use your Mac on an everyday basis will determine which components mean the most to you (see "What Matters When?"). If you need to move large chunks of data—Photoshop pros, take note—loading up on RAM will generally do you more good than superfast hard drives and hyperclocked processors. Faster processors generally make for faster Macs, but they aren't good investments unless you spend a lot of time with processor-intensive 2-D, 3-D, or video applications. And if you're a gamer, spend some cash on a better video card and watch frame rates skyrocket along with your scores.

Whether you're shopping for a new Mac or just trying to squeeze more life out of your current system, look beyond megahertz: it will help you make a much wiser hardware investment. **m**

Associate Editor JONATHAN SEFF specializes in Mac systems and multimedia.



**Windows Media Player 7 for Mac**

**Rock your Mac.**

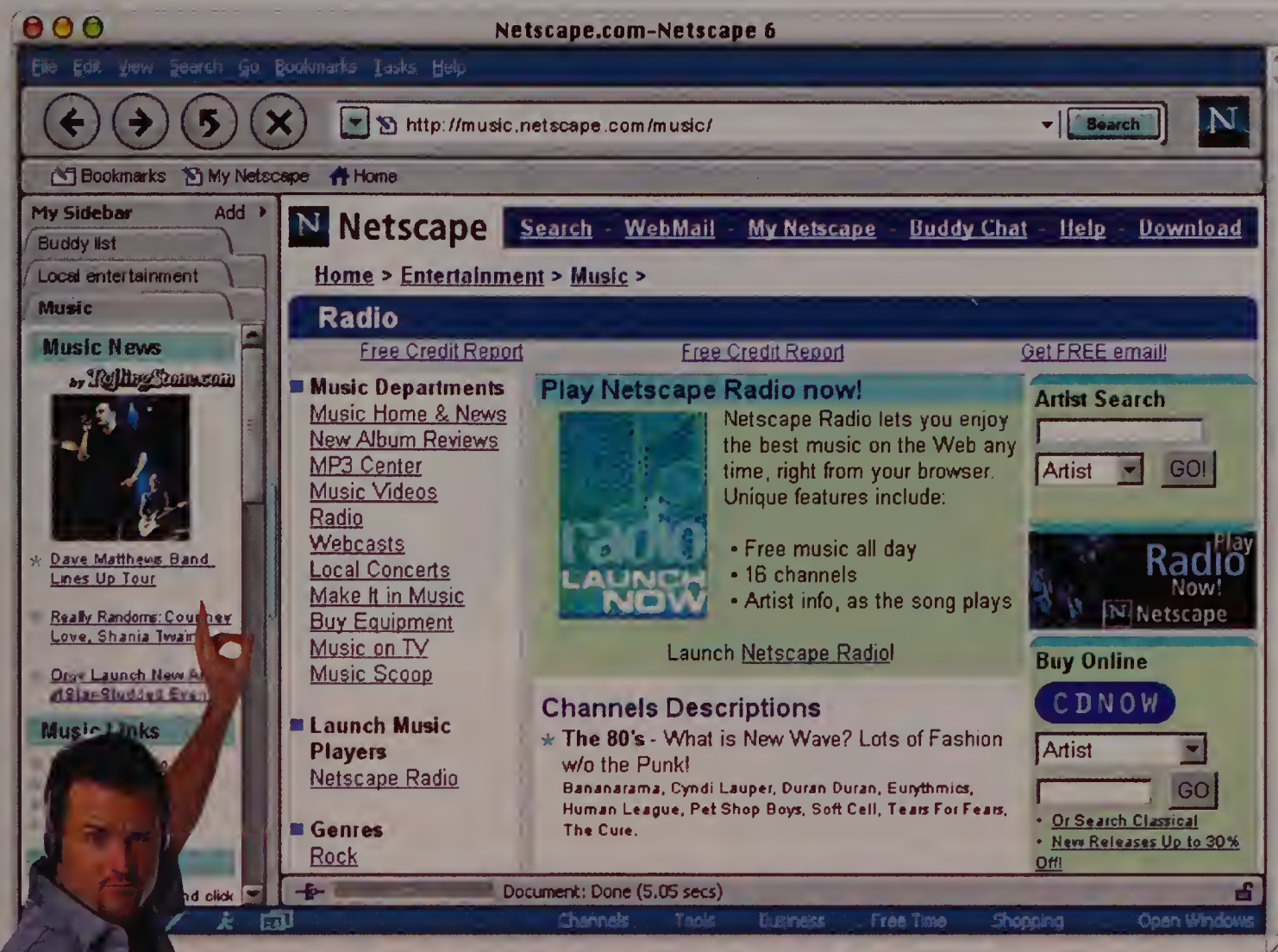
Turn out the lights and get ready for your own personal concert. The free Microsoft® Windows Media™ Player 7 for Mac gives you access to music, movies and more. From works by the most popular artists and film studios to cool, obscure stuff some guy did in his garage. Whatever you want—it's yours. Rock on.

[windowsmedia.com](http://windowsmedia.com) **Microsoft**  
Where do you want to go today?

© 2001 Microsoft Corporation. All rights reserved. Microsoft, the Microsoft logo, Where do you want to go today?, and Windows Media are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Mac is a registered trademark of Apple Computer, Inc.



# Personalize your Internet with Netscape®



**M**ichael Cunningham is a software developer and a real music lover. He'll find Netscape an ideal way to be more productive online because he can personalize the Internet for the way he works. With new Netscape 6, Michael can keep all of his most important information at his fingertips for fast and easy access. He can stay in touch with coworkers through his buddy list and listen to Netscape Radio during the day for inspiration. At Netscape.com, he can quickly find news and information to help him keep up with what's happening in his field. Other features like search, email and a personalized home page can help Michael streamline his work tasks (so he has more time for concerts). But Netscape is not just for software developers. Try Netscape today and see what it's like to experience the Internet your way.

Visit [Netscape.com](http://Netscape.com) today. It's free.



The power of the Internet made simple







# INSIDE THE OS X EXTRAS

## GET THE SCOOP ON 5 USEFUL APPLICATIONS THAT COME WITH THE NEW OPERATING SYSTEM

ILLUSTRATION BY  
MARGARET RIEGEL

**A**pple has provided not only a completely new operating system but also a collection of new applications and utilities to show it off. Like the MacPaint and MacWrite programs on the earliest Macs, the new Mac OS X applications exist as much to demonstrate the promise (and polish) of OS X as to do their primary jobs.

Take the Clock application. Despite its location in the Utilities folder, its actual utility is debatable. After all, if you want to know what time it is, you need only glance at the right side of the menu bar. But when you adjust the transparency of Clock's analog display so that it floats faintly over a document window without obscuring your work, the elegance of OS X's Aqua interface is undeniably apparent. A similar claim can be made about the updated Stickies application. No, the world hasn't been clamoring for a better, prettier Stickies app, but this one sure *looks* cool.

Given the resources Apple surely invested just to get the first version of OS X out the door, it's a little surprising that apps as nonutilitarian

as Clock or as inessential as the Chess program were included at all. But most of Apple's OS X applications serve more practical needs. Console, Process Viewer, Terminal, and NetInfo Manager, for instance, help Unix and network geeks get their work done. Internet Connect, Grab, QuickTime Player, Image Capture, Calculator, and TextEdit take care of basic functions—often far more elegantly than their predecessors. And showing its commitment to open-source standards, Apple includes Applet Launcher (for Java applets), too.

Here's a look at the most-important applications that come with OS X. And to help you get some OS X dirt under your nails while you wait for Carbon apps to appear later this year, we've also included some tips on using them.

### ADDRESS BOOK

For Apple to call Address Book an application is somewhat misleading. This is not what used to be called, in pre-handheld days, a "personal information manager," or PIM. Address Book is not what you'll use to address

your holiday newsletter or to keep track of birthdays. Rather, Address Book is like a part of Apple's Mail application (see "Review: Mail," elsewhere in this feature) that has been split off into its own app—kind of like *Joanie Loves Chachi* was spun off from *Happy Days*.

Every e-mail program has some kind of address book where you can keep a list of e-mail addresses that you frequently use. Address Book provides that functionality in stand-alone form. Its primary purpose at present is to provide address-book functionality to Mail, but there's no reason it couldn't work with other e-mail programs or interact directly with your handheld in the future. Address Book supports the vCard specification for personal information—a standard endorsed by everyone from Microsoft to Palm. Address Book lets you save individual addresses as vCards, essentially electronic business cards. They can be sent (by e-mail or IR beam) as files and then imported into applications such as Address Book by dragging and dropping.

**Putting It in Contacts** When you open Address Book, a window lists



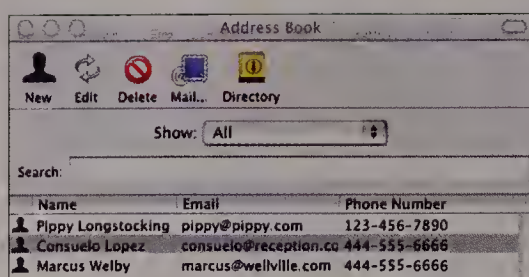
all of your contacts. This view lets you see only each contact's name, phone number, and e-mail address. To view more information, you must open a contact's record.

There are two easy ways to add contacts. One is to import them from a tab-delimited list. If you keep e-mail addresses in a PIM such as Palm Desktop, it's easy to save your contacts in a text file and then use Address Book's File: Import command. If you want to import addresses from a different e-mail program's address book, things might get trickier. Check out the eMailman Web site (<http://emailman.com/conversion/#addrmac>) for tips on importing address books from various programs.

The other approach is to use Address Book's Add Sender command (⌘-Y) to quickly add a bunch of e-mail addresses. Say you have a folder of saved messages from your friends. Select them, and redirect them to yourself from within your e-mail program. (Don't forward them or they'll be sent to you from yourself.) Send these messages; then quit your e-mail program before it has a chance to check your mailbox. Log on to OS X's Mail program to receive the messages that you just redirected to yourself. Select them, and press ⌘-Y.

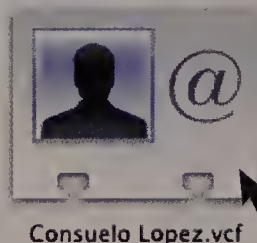
Address Book has a few other cool tricks, as well. To put a vCard from Address Book onto your desktop, click on the address's head icon and drag the vCard to where you want it (see "Desktop Business Cards"). If you receive a vCard that you'd like to add to Address Book, double-click on the vCard, and it will open in the Address Book application—with a button that allows you to add it.

Every vCard has a field for a picture. It's simple to add a photo to this



#### Desktop Business

**Cards** Want to put a vCard on your desktop? Simply grab the head icon next to the contact's name (top) and drag it to the desired spot (bottom).



field: you just drag and drop a JPEG, GIF, TIFF, PNG, or PDF file. Apple says you'll get the best results using a file that's 64 by 64 pixels, but you can get acceptable results with photos nowhere near that size or proportion, as the following example illustrates.

1. First, create a new contact record in Address Book.
2. In the Name fields, enter **Andy Ihnatko** (*Macworld* columnist and beloved industry figure).
3. Enter Andy's e-mail address: **andyi@world.std.com**. This step is essential, because without an e-mail address, a record cannot contain a picture.
4. Using Microsoft Internet Explorer, visit [www.andyi.com](http://www.andyi.com).
5. Scroll down to the "unnaturally flattering" photo of Andy; click and hold the mouse on it to download it. Save it to the desktop for easy access.
6. Quit Internet Explorer.
7. Drag the photo from the desktop to the Picture field on the address record you just created. Once Andy's face appears in the field, you can click on Save. Andy Ihnatko's name, e-mail address, and photo should now appear in your Address Book.

Adding a photo to a record has one immediate benefit: every time you  
*continues*

## REVIEW: MAIL

### Mac OS X's E-mail Program Lacks Polish, Harbors Bugs

Mac OS X's commitment to the Internet is one of its most appealing features, from the Apache Web server under the hood to the inclusion of iDisks in the Finder. Most people use the Internet primarily to send e-mail, so Apple's Mail 1.0, included with OS X, is welcome, especially as one of the few native Mac OS X (or Cocoa) applications available in these early days. Unfortunately, the first version of Mail has many drawbacks and outright bugs, making it unsuitable for heavy use.

The program includes most of the features you would expect in a modern mail application. It supports multiple e-mail accounts, of which any can be POP, IMAP, or Unix. You'll also find a Rules feature, for filtering mail based on criteria you select; support for multiple signatures; and the ability to create and view messages with images and Rich Text formatting. Converting from other mail programs is easy; Apple has made a set of unsupported AppleScripts, available on its Web site, that let you import messages from Microsoft Entourage and Outlook Express, Qualcomm Eudora, Netscape Communicator, and Claris EMailer.

As part of the initial registration of Mac OS X, you're asked to enter or create an iTools account, which includes a mac.com e-mail address. (You can also choose to add other mail accounts during setup.) The installer conveniently sets up your mac.com account in Mail as part of this process, so you're ready to send and receive e-mail as soon as you're up and running with Mac OS X. If you skipped entering your iTools information during installation, Mail can still set up your mac.com account for you. Just open System Preferences, click on the iTools tab, and enter your iTools user name and password; then click on the Email tab and select the Use iTools Email Account option.

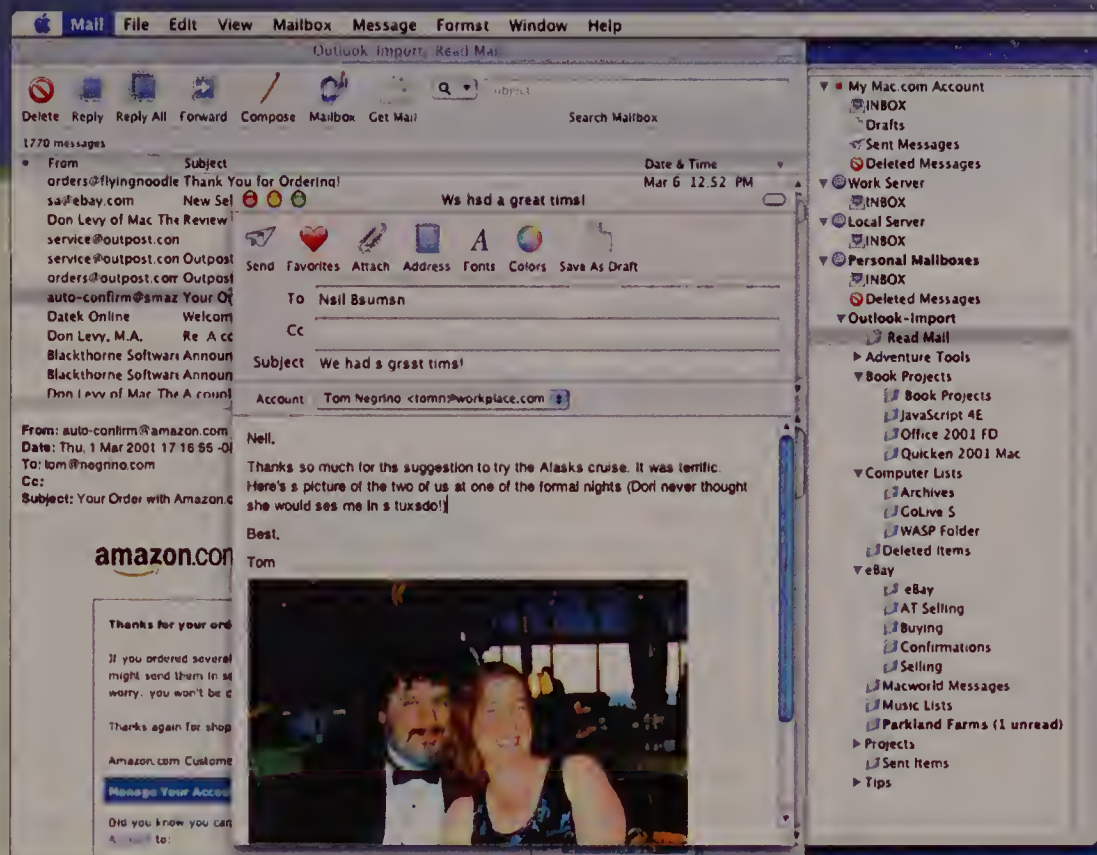


## Making and Reading Mail

Mail lets you compose e-mail messages in one of two formats: plain text and Rich Text. The first is text with no fancy formatting. Rich Text adds formatting tags to text, allowing you to add fonts, font styles, and inline images. Rich Text is similar to HTML; however, Mail cannot create e-mail in HTML format. Rich Text conforms to the Internet mail format for enriched text and can be read (with varying degrees of accuracy) by programs such as Eudora and Outlook Express. Some older e-mail programs can't handle Rich Text; those programs will show the formatting tags in the message body and turn embedded images into attachments. Mail's Rich Text is not the same as Rich Text Format (RTF), a document interchange format created by Microsoft (and also the native format of OS X's TextEdit).

Using Mail to compose messages is easy and enjoyable. Mail uses Apple's Address Book application for addressing; addresses automatically complete as you type them, or you can drag and drop addresses from Address Book into your new message form. One annoying drawback is that if a contact has more than one e-mail address listed in Address Book, Mail can access only the first address. You can work around this by making another address record for each e-mail address, but there's no way to define an e-mail address as the primary one for a person. Spelling mistakes are underlined as you type, and you can fix errors simply by clicking on a contextual menu item. And of course, as a Cocoa program, Mail takes full advantage of OS X's gorgeous text styling and rendering, with the full palette of antialiased fonts, styles, and text colors available.

Mail displays incoming e-mail that was created in plain text, Rich Text, or HTML formats. Unfortunately, the HTML mail display is buggy; sometimes inline images fail to display when you first view



**Pretty on the Outside** Mail, which is free with OS X, looks great, thanks to the Aqua interface; however, it needs more depth and better stability.

the e-mail message. If you switch to another message, then back to the first one, the images load properly.

### Deficient in the Details

Good filtering is an essential feature for e-mail programs (especially to help keep the flood of spam out of your in-box), but here Mail falls short. The range of filtering criteria is too small, and you can filter only by one criterion per rule. Mail also lacks some useful features you can get in other programs, such as Outlook Express's Junk Mail Filter, or Eudora's text-formatting plug-ins.

You'll quickly run into some of Mail's limitations. For example, you can search only one mailbox at a time, and you can't redirect incoming mail. Overall performance wasn't especially snappy on

a 400MHz Power Mac G4 with 256MB

of RAM; like much of OS X, Mail just feels slow, especially when opening mailboxes with many messages or resizing windows.

If you need assistance, you probably won't find it in Mail's abysmal help files. Far from comprising a good tutorial or reference, they supply only the smallest amount of information, and they fail to explain many of Mail's features altogether.

Given the importance of e-mail, you would expect Mail to be practically

bulletproof, or at least immune to simple crashes. Unfortunately, this is not the case. The program unexpectedly quit many times during my testing, and I discovered a reliable way to crash it: simply double-clicking on a particular spot in the mailbox list.

### Macworld's Buying Advice

That it's free is one argument in favor of using Mail, but when you consider Mail's problems, this argument may not prove strong enough. You can readily get free versions of other, better mail programs, and no one likes a program that crashes. Until Apple fixes Mail's bugs and addresses at least some of its shortcomings, you're better off sticking with Qualcomm Eudora or Microsoft Outlook Express.—TOM NEGRINO

#### MAIL

**Rating:** ★★

**Pros:** Nicely integrated with iTools; flexible mail composition; many formatting options.

**Cons:** Buggy; limited by Address Book; weak mail filtering; inadequate help files.

**Company's Estimated Price:** Free with Mac OS X

**Company:** Apple Computer, 408/996-1010, [www.apple.com](http://www.apple.com)





get a message in OS X's Mail application from that e-mail address, the person's photo will appear in the upper right corner of the Address Book window. Of course, to test our example you'd have to get an e-mail from Andy Ihnatko; fortunately, he's a prolific correspondent.—JAMES BRADBURY

## TERMINAL

Before 1984, most computers used what was essentially a "terminal" interface. You may remember it well: the blinking orange cursor waiting for you to type something such as `C://` on a black screen. The Mac changed all that, as the first personal computer to have a GUI (graphical user interface). So it may seem odd that Mac OS X includes Terminal, an application that lets you access the Unix command line underneath the interface.

Why would Apple catapult us back to the early eighties? Well, even though you'll be just fine if you never venture beyond OS X's Aquified programs, you can do much more with OS X by taking control of the command line. You can use OS X's built-in suite of Unix commands to perform a wide range of tasks, from finding hidden files to deleting files you're unable to put in the Trash Can. (See "Take Command of Mac OS X," *How-to*, elsewhere in this issue for help with using the command line.)

But you don't have to limit yourself to the commands under OS X's hood. The Internet abounds with Unix applications that you can compile and run from the command line. For instance, you can use *pine* (a popular text-based e-mail client) and *mmap* (an application that scans IP addresses for open ports, helping you find security holes in your network). You can also use the command line to create *shell* scripts (similar to Apple-

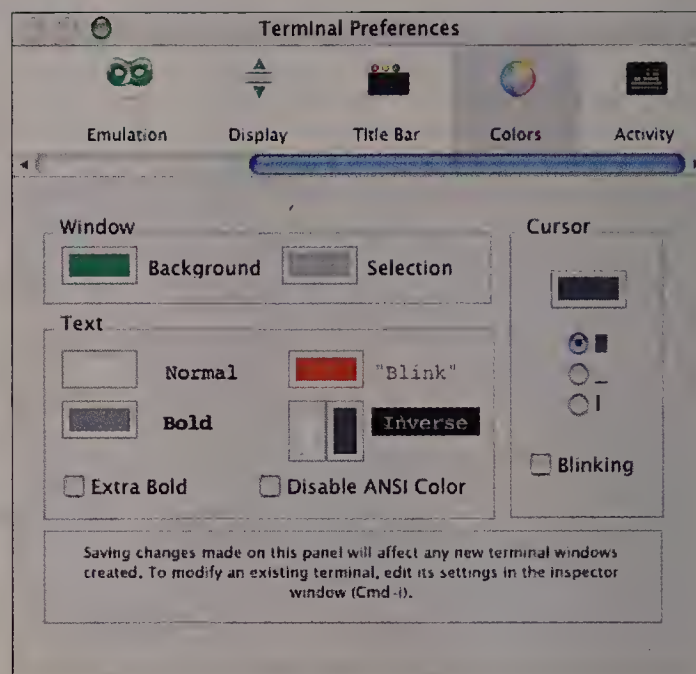


**Terminally Beautiful** Get in touch with your inner geek—change Terminal's look by using green Monaco text on a black background (think Apple II).

Scripts) that enable your Mac to perform tasks such as copying a set of files to a removable disk and then compressing them. Using a script with the Unix `cron` command—which lets you schedule system functions such as copying or synchronizing files—you can even have your Mac run scripts in your absence.

**Hey, Good Looking** Before you dive into using the command line, you may want to try customizing Terminal's appearance. For example, you can change the size of the Terminal window if you want to see more or longer lines of text than are visible in the default setting, 80 by 24 characters. Simply go to Terminal's Preferences dialog box and click on General to get to the window-size options. Keep in mind, however, that if you access a computer remotely, Terminal will use the standard 80-by-24-characters setting on the remote display. The result could look rather odd.

You can also go for a whole new look by customizing the font and background colors of the Terminal window. You do this from within the





Mac OS iterations: for instance, you can choose the cursor you'd like to appear in your screenshot, take timed shots, or choose a portion rather than the entire screen.

Grab is also one of the applications that appears as a service in other applications. To see how this works, open the TextEdit application from the Applications folder. Type in some text, and then choose Services: Grab: Selection from the TextEdit menu. After you select a portion of the screen as directed, Grab inserts it into your text window.—JAMES BRADBURY

## NETINFO MANAGER

NetInfo Manager is a powerful administration tool, but it's not for the average user. If you're a system administrator, or if you've had experience managing Unix computers that used the NetInfo Database or Mac OS X Server, you're a prime candidate for putting this application to work.

You use NetInfo Manager primarily to perform Unix administration tasks. You can use NetInfo Manager to mount NFS directories, for instance (Network File System is a Unix file-sharing standard for local networks). Since OS X stores user and password information in the NetInfo database, you can also use NetInfo Manager (instead of System Preferences) to make changes to user accounts. If the database is shared on a network, you can administer user accounts on multiple Macs and Unix machines.

**Are You Ready for Your Mystery App?** There's nothing Mac-like about the NetInfo database, and the NetInfo Manager utility is only remotely Mac-like. Making changes in this application—such as selecting an item and pressing the delete key—can cause damage and even make OS X unusable on your Mac. Be sure you know how to use this program before opening it.

It's not easy to obtain help in using NetInfo Manager. Don't even bother looking to the Help menu, which will tell you only, "Help isn't available for NetInfo Manager." Fortunately, you *can* access information from the Unix command line. Open Terminal (Applications: Utilities), and type the command `man netinfo` in the Terminal window. This will bring up a Unix manual (circa 1990) that defines the various aspects and parameters of the NetInfo database. In order to scroll through the manual, just press the return key. When the percentage displayed at the bottom of the Terminal window reaches 100, you have reached the end of the document.

### Getting into NetInfo Manager

Except for its Aqua interface, this NetInfo Manager is the same as the Mac OS X Server version. The top half of its main window consists of a Directory Browser that looks like the Finder's column view.

However, NetInfo *directories* are not folders in the file system but subgroups of the database. When you click on a NetInfo directory, the bottom portion of the NetInfo Manager window will display Property fields and a corresponding value. You can edit the field names and values or create new directories. To edit them, click on Users and then on a user name. This will let you see and edit the user's name, short name, password, password hint, and other attributes.

**Power Troubleshooting** If you need maximum control over a system so you can do low-level Unix troubleshooting, log in to NetInfo Manager as the root user. This will give you access to every folder in OS X—even the invisible ones. (Unless you're sure of what you're doing, though, skip this trick; it gives you so much control that you can endanger your entire system.)



**The Key to Change** You can use NetInfo Manager to make changes to Mac OS X user names, passwords, and hints; all are stored in the NetInfo database.

To log in as the root user, click on the padlock icon in the lower left portion of the NetInfo Manager window, and type in your administrator password (the password you chose when you installed OS X). Now go to the Domain menu, select Security, and choose Enable Root User from the submenu. You'll be asked to create a password for the root domain. Do so, and you'll be able to log in as the user Root.—JOHN RIZZO

## THE LAST WORD

The extra applications that come on the Mac OS X installation disc are certainly not the be-all and end-all of what we can do with this new operating system. Instead, they simply whet our appetites for the feast that will be available in the Mac's near future. **m**

JAMES BRADBURY is a former editor of *MacUser* magazine. *Macworld* Associate Lab Analyst BRETT LARSON writes about Mac OS X in his weekly online column ([www.macworld.com/subject/macosx/](http://www.macworld.com/subject/macosx/)).

JOHN RIZZO is the author of *How the Mac Works* (Que, 2000) and creator of the MacWindows.com Web site.





# PUT THAT MAC BACK TO WORK AS A WEB SERVER

BY ADAM C. ENGST

## OTHER ARTICLES IN THIS SECTION

### 68 Designing DVD Menus

Learn how to use Adobe Photoshop to design DVD menus.

### 72 Take Command of Mac OS X

There's no need to fear our gentle introduction to the command line.

### 76 Mac OS X Secrets

Perl scripting is a powerful new possibility in OS X.

### 78 Mac 911

Get the skinny on disk space; Disc Burner; and infrared printing.

**You don't need an expensive Web-hosting service to share** pictures of your toddler with a few relatives online or to support a flood of visitors to your custom fly-tying business's Web site. You can turn an old, idle Mac into a server that will give you the ultimate control over your personal Web site. Serving Web pages doesn't require much CPU power, RAM, or hard disk space, making it a perfect use for an older Mac.

In the first article in our "Old Mac, New Tricks" series (*How-to*, June 2001), we told you how to get an old Mac up and running again. Now we'll show you how to turn it into a Web server. The process is fairly simple—and depending on

ILLUSTRATION BY DAN WINTERS AND GARY TANHAUSER







your raw materials and what you want to accomplish, you can do it for little or no money.

## STEP 1 Choose Your Web-Server Hardware

Before you dive into this project, you'll need to make sure your old Mac gathering dust on a shelf is a suitable candidate for Web serving. Also consider what hardware upgrades your elderly Mac might need to bring it up to snuff.

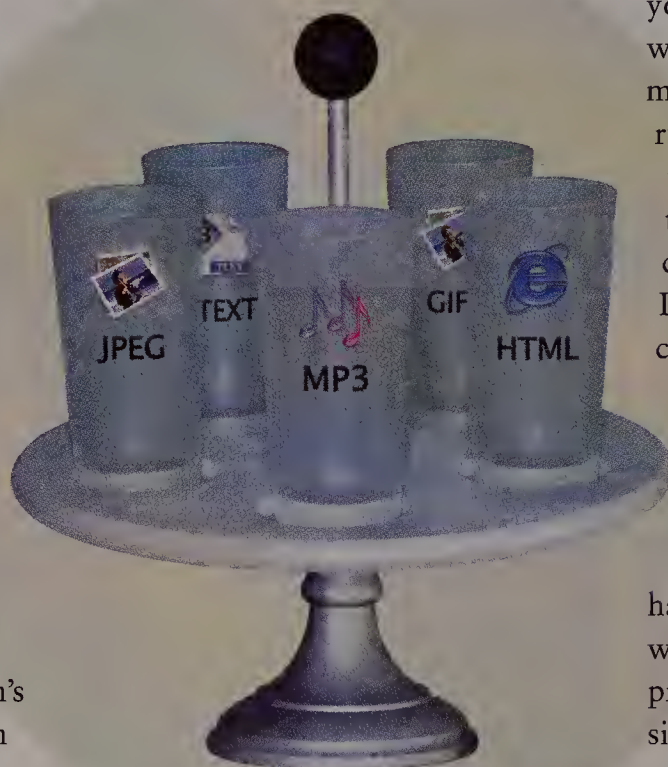
**Recommended Models** For reasonable performance, I recommend a Power Mac or a PowerPC-based PowerBook or Performa (those with four-digit model numbers, such as the PowerBook 5300 or Performa 6400). A 68040-based Mac—those in the Centris or Quadra line, for example—will also work, albeit slowly. Many of these Macs have on-board Ethernet, but if your Mac lacks it, you'll need an Ethernet card to connect your server to other computers. The tricky part is finding the appropriate Ethernet card for your old Mac; the possibilities vary widely. See Farallon's LAN Product Selector ([www.farallon.com/products/selector/](http://www.farallon.com/products/selector/)) for information, and check for deals on eBay.

**RAM and Disk Space** Make sure your Mac has at least 32MB of RAM—enough room to run Mac OS, the Web-server software, and perhaps a few utilities. More is better, but since buying new RAM for older machines is expensive, ask around to see if anyone will give or sell you unused memory cards that will work with your Mac. You can check [www.gurulounge.net](http://www.gurulounge.net) if you're not sure what type of memory to buy, and [www.ramseeker.com](http://www.ramseeker.com) to find the lowest prices.

As for hard-disk space, you will need between 75MB and 150MB for the System Folder—plus whatever your Web-server software and site files require. Unless you're serving

QuickTime movies, MP3 music files, or a lot of large images, almost any hard drive with a capacity of over 300MB will suffice.

**Monitor, Keyboard, and Mouse** An old monitor will work fine with your Web server. Or you can use your main monitor during setup, then switch to a VGA adapter and control the server Mac remotely over the network with a utility such as Netopia's Timbuktu Pro or the free VNC. (The VGA adapter—a small plug that lets



older Macs use monitors with VGA-style connectors—fools your Mac into thinking it has a monitor and enables the remote-control software to work.) The same goes for a keyboard and mouse—you will want them for initial setup, but after that you can rely on remote-control software most of the time.

**Automatic Restart Device** Finally, if you're going to check in on your Web server only infrequently, you should probably use a device that can restart the Mac automatically if it crashes, such as the \$99 Rebound, \$200 PowerKey Pro, or \$179 Kick-off (for USB Macs), from Sophisticated Circuits (800/769-3773; [www.sophisticated.com](http://www.sophisticated.com)), or the \$99

MacCoach, from Neuron Data Systems ([www.neuronsys.com](http://www.neuronsys.com)).

## STEP 2 Choose Your Internet Connection

Before you dive into configuring an old Mac as a Web server, make sure to choose an appropriate Internet connection. Bear in mind that some ISPs—mostly cable companies—don't allow you to run servers.

**Permanent Connection** Because you never know when someone will want to access your Web site, you must not only leave your Web server running all the time, but also maintain a permanent connection to the Internet. Any type of Internet connection can be permanent, but DSL, cable, and ISDN are the most common choices.

**IP Address** Web servers generally have permanent addresses—stable IP numbers that identify them. However, the dynamic or changeable IP numbers handed out by many ISPs change whenever you restart your machine, preventing people from finding your site. There are two solutions to this problem: The first is asking your ISP for a permanent IP number. (That service sometimes costs a little more.) Alternatively, you can sign up with one of the dynamic DNS providers that rely on special software (running on your Mac) to connect whatever your dynamic IP address is to a specific domain name. See [www.technopagan.org/dynamic/](http://www.technopagan.org/dynamic/) for more information and a list of providers.

**Fast Connection** Though you can save money and can still operate your Web server if you opt for a slower Internet connection, faster is better if you want your site to respond quickly. And you can share this speedy connection with the rest of the computers on your network. (For more information on sharing your Internet connection via an Ethernet



network, see “Simultaneous Surfing,” *How-to*, September 2000.)

The upload speed of your connection is particularly important. Many Internet connections, including most DSL and cable ones, are asymmetrical. This means the upload speed, which affects how fast your Web pages load on viewers’ screens, isn’t as fast as the download speed, which determines how fast you can grab a collection of MP3s off the Web, say.

To determine whether your upload speed is fast enough to meet your needs, find out the real speed of your connection using the tests at [www.dslreports.com/stest](http://www.dslreports.com/stest). You’ll want an upload speed of at least 56 Kbps; 128 Kbps or higher is better.

**Domain Name** Finally, though it’s not essential, you should get a domain name for your site. Without a domain name—a simple, easy-to-remember URL such as [www.macworld.com](http://www.macworld.com)—people will have to enter long, complex links or your Web server’s IP number into their browser to visit your site. Unfortunately, setting up a domain name can be quite confusing. If your ISP can’t or won’t help, check out The Public DNS, at [soa.granitecanyon.com](http://soa.granitecanyon.com), or ZoneEdit, at

[www.zoneedit.com](http://www.zoneedit.com), for free domain-name service (the latter also supports dynamic DNS).

### STEP 3 Choose Web-Server Software

Think realistically about your needs when choosing your Web-server software. Try to estimate how much traffic you will get and what utilities you may want. (See “Traffic Control” for help selecting

IT'S EASY  
TO START WITH  
APPLE'S  
PERSONAL WEB  
SHARING

the appropriate hardware, software, and Internet connection for the amount of traffic you expect.)

**Software for Light Traffic** If you expect a few thousand hits a day at most and aren’t concerned about your Web site’s response speed, you can get by with free or inexpensive server software. These programs are also best if

the Mac you’re using is on the slow end of the models we recommend.

It’s easy to start with Apple’s Personal Web Sharing. It comes free with Mac OS 8 and later, it’s trivially simple to set up (see “Web Sharing Control Panel”), and it offers Personal NetFinder (which provides a Finder-like listing of files) for people who might want to, say, share some baby pictures without building an entire HTML page. Personal Web Sharing’s performance is OK, but the program is tweaked to work best in the background of a Mac that’s doing everyday tasks. Another downside is that it doesn’t have a live log (on which you can watch connections scroll by—many people find this quite entertaining). Also, if you’re trying to figure out why your machine keeps crashing, why you can’t get in via the Web, or just what in heck is going on, the live log is a big help.

Also free is Chuck Shotton’s recently revitalized MacHTTP ([www.machttp.org](http://www.machttp.org)). MacHTTP performs well, it provides a live log (see “MacHTTP Log Watching”), and it’s almost as easy to set up and maintain as Personal Web Sharing.

*continues*

## Web-Server Software

COMPANY	PRODUCT	MOUSE RATING	COMPANY'S ESTIMATED PRICE	CONTACT	COMMENTS
4D	WebStar Server Suite 4.3	★★★★	\$599	800/881-3466, <a href="http://www.webstar.com">www.webstar.com</a>	Easy setup; additional features include an e-mail server, FTP server, support for secure connections, and database connectivity.
Apple	AppleShare IP 6.3.3	★★★★½	\$450	800/692-7753, <a href="http://www.apple.com/appleshareip/">www.apple.com/appleshareip/</a>	Includes FTP, e-mail, and print servers; offers file sharing for Macs and Windows machines.
Apple	Personal Web Sharing	N/A	Free	800/692-7753, <a href="http://www.apple.com">www.apple.com</a>	Easy setup; provides a Finder-like listing of files; best option for a Mac that’s also being used for other tasks; no live log.
Chuck Shotton	MacHTTP	N/A	Free	<a href="http://www.machttp.org">www.machttp.org</a>	Easy setup; best performance among the low-end options; provides a live log.
Stairways Software	NetPresenz 4.1	★★★★	\$70	<a href="http://www.netpresenz.com">www.netpresenz.com</a>	Relies on Personal File Sharing for access privileges; complicated setup; provides an FTP server.
Tenon Intersystems	WebTen 3.0	N/A*	\$495	800/662-2410, <a href="http://www.tenon.com">www.tenon.com</a>	Features the Unix-based Apache Web server, site caching to improve performance, and the PHP scripting language for dynamic Web content; includes a Web-based mail server, FTP and DNS servers, and a search engine.

N/A = not applicable. \* WebTen 2.0.4 received ★★★★★ (Reviews, September 1998); a review of version 3.0 is pending.



Another alternative is the \$70 NetPresenz, from Stairways Software ([www.netpresenz.com](http://www.netpresenz.com)). It relies on Personal File Sharing for access privileges, which makes it more complicated to set up and slows performance a bit. However, it also provides an FTP server for remotely uploading files via programs such as Interarchy or Fetch, which is useful if you want to let other people update your site from their own computers.

Of these Web servers, Personal Web Sharing is the easiest to use, and MacHTTP offers the best performance and the bonus of a live log. Purchase NetPresenz only if you need an FTP server for remote uploading.

**Software for Heavy Traffic** If you expect more than a few thousand hits a day, you'll need more-expensive high-performance software. For example, the main TidBits Web site relies on a Power Macintosh 7600 with 80MB of RAM running WebStar; that combination enables it to handle 30 simultaneous users, accounting for roughly a million hits a month, without breaking a sweat.

All the high-performance Web servers come bundled with extensive suites of other servers, including mail servers, search engines, and more.

The best-known Web-server software for the Mac is 4D's \$599

WebStar Server Suite (408/557-4600, [www.webstar.com](http://www.webstar.com)). It provides not just a Web server but also an e-mail server, an FTP server, support for secure connections (in case you want to conduct e-commerce), a built-in search engine, and database connectivity through WebStar Lasso Publisher (useful for serving FileMaker or 4D databases via the Web). It has



a number of powerful features, yet it's easy to set up and it performs extremely well.

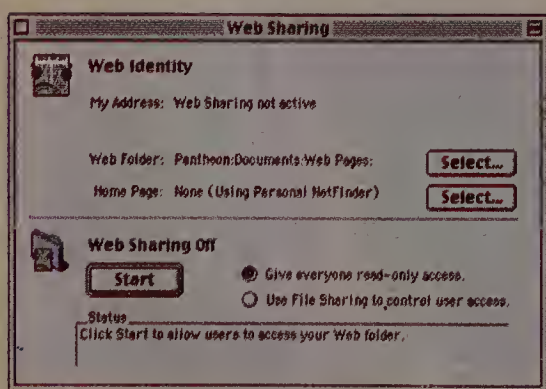
Tenon Intersystems' \$495 WebTen (805/963-6983, [www.tenon.com](http://www.tenon.com)) is based on the Apache Web server. This means you can tap into the features and performance of this powerful open-source Unix server,

which many of the major Web sites use. WebTen also features site caching to improve performance, a Web-based mail server and client, FTP and DNS servers, a search engine, and the PHP scripting language for making dynamic Web content. Despite its Unix-based power, WebTen remains a Mac application, with support for AppleScript, WebStar plug-ins, and more.

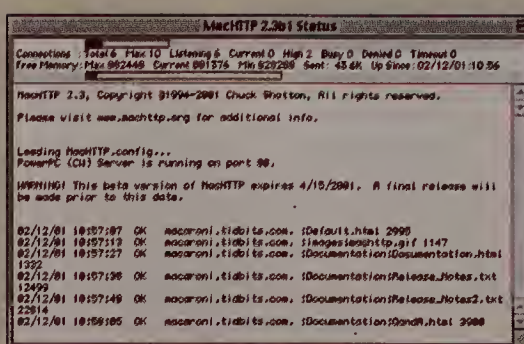
Finally, Apple's AppleShare IP (\$450 for a ten-client license; 800/692-7753, [www.apple.com/appleshareip/](http://www.apple.com/appleshareip/)) provides a suite of services along with Web serving, including an FTP server, file sharing for Macs and Windows machines, an e-mail server, and a print server.

The most common choice is probably WebStar. WebTen is popular with people who want the ultimate in performance and have some Unix experience. AppleShare IP is best if you need its local file- and print-serving capabilities as well as Web and e-mail serving.

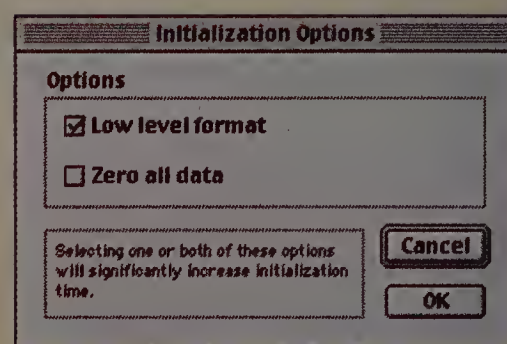
**Utility Software** To run your server without a monitor, mouse, and keyboard, you'll need to control it remotely with either Netopia's \$140 Timbuktu Pro (510/814-5000, [www.netopia.com](http://www.netopia.com)) or the free, but somewhat flaky, VNC, from AT&T Laboratories Cambridge ([www](http://www)



**Web Sharing Control Panel** Starting up Apple's Personal Web Sharing can be as simple as selecting the folder that holds your Web files and clicking on the Start button.



**MacHTTP Log Watching** It can be a lot of fun (not to mention useful in troubleshooting) to watch the log of people accessing your Web server in real time.



**Reformat Your Hard Disk** To prepare a hard disk for Web serving, run Drive Setup. From the Function menu, choose Initialization Options, select the Low Level Format option, and click on OK. Then select the hard disk and click on Initialize.



.uk.research.att.com/vnc/). Timbuktu Pro comes in a twin-pack—one copy to run on your server, one to run on the remote machine—and offers niceties such as drag-and-drop file transfer.

Karl Pottie's \$22 Keep It Up ([www.vl-brabant.be/mac/kiu.html](http://www.vl-brabant.be/mac/kiu.html)) is a useful shareware utility with which you can monitor your server remotely, launch and quit applications, restart the machine on a regular schedule or whenever programs crash, and receive e-mail alerts of low memory or disk space.

#### STEP 4 Configure Your Mac

Once you've arranged for the proper Internet connection and gathered all the hardware and software you need, it's time to install and configure your software.

**Reformat and Install** First you'll need the Mac OS CD-ROM, preferably version 8.1 or 8.6. If you have the CD-ROM for only 8.0 or 8.5, you can download free updates to 8.1 or 8.6 from Apple's Software Updates Web site ([asu.info.apple.com](http://asu.info.apple.com)).

Since you may have no idea of the state of your old Mac's hard disk, I strongly recommend booting from the Mac OS CD-ROM and using Apple's Drive Setup to do a low-level reformat (see "Reformat Your Hard Disk")—you'll want to know sooner rather than later if the drive is dead.

After reformatting, install the Mac OS. It's best to do an Easy Install and let the installer give you everything. Afterward, use Extensions Manager to turn off unnecessary extensions and control panels

## Traffic Control

Use this chart to select the hardware, software, and Internet connection that will meet the minimum requirements for your expected level of traffic. Although it's difficult to be precise, assume that a Web server set up for light traffic can accommodate a few thousand hits a day at most. If you expect more traffic than that, refer to the heavy-traffic recommendations.

	LIGHT-TRAFFIC MINIMUMS	HEAVY-TRAFFIC MINIMUMS
Mac CPU	6B040 or PowerPC 601	PowerPC 603
RAM	32MB	64MB
Hard disk space	300MB	500MB
Connection speed	56 Kbps	128 Kbps
Software	Personal Web Sharing, MacHTTP, or NetPresenz	WebStar, WebTen, or AppleShare IP
Utilities	None	Automatic restart device, Keep It Up

that can take up memory and contribute to instability. If you're not sure what to turn off, consult either Dan Frakes's \$15 InformInit ([www.informinit.com](http://www.informinit.com)) or Teng Chou Ming's \$20 Extension Overload ([www.extensionoverload.com](http://www.extensionoverload.com)).

Finally, install the Web-server software you've chosen, along with any utilities you've decided to use.

## KEEP AN EYE OPEN FOR LOG FILES FILLING UP THE DISK ON BUSY SERVERS

**Ready, Set, Go** Starting up your Web server is easy—all you need to do is specify your Web-site folder (the location will vary depending upon which software you're using), copy HTML files and associated GIF or JPEG graphics to the Web-site folder, and launch your Web-server program. Be careful to put only files you want to serve to the public in the Web-site folder—you wouldn't want

to publish any personal information by mistake.

All that's left is testing. Try accessing your Web site from another Mac on your network as well as from a computer outside the network. Be sure your ISP has updated any domain-name servers (if looking up your domain name fails, try the IP number). A final tip: Keep an eye open for log files filling up the disk on busy servers.

It's easy to miss a minor step, so if your site doesn't come up, don't panic—just retrace your steps.

### The Last Word

It's easy and fun to set up your own Web server on an older Mac, and it can save you money—compared with paying a Web-hosting service. So bring that Mac down off the shelf and give it some dignity in its old age by letting it perform a useful task for which it's eminently well suited. **m**

Contributing Editor ADAM C. ENGST is the publisher of TidBits, president of the Info-Mac Network, and author of numerous books and articles about Macs and the Internet.

**More Info:** [www.macworld.com/2001/04/13/howto/backup.html](http://www.macworld.com/2001/04/13/howto/backup.html)

Find out how to use an old Mac as a backup server.

**More Info:** [www.macworld.com/2001/05/14/howto/kitchen.html](http://www.macworld.com/2001/05/14/howto/kitchen.html)

Learn how to put your old Mac back to work as a kitchen assistant.

**More Info:** [www.macworld.com/2001/subject/oldmac](http://www.macworld.com/2001/subject/oldmac)

No time to type in URLs? Get a complete list of the links mentioned in this article.

LINKS



# Designing DVD Menus

## *Photoshop and DVD Studio Pro Make Menus Together*

A great meal at a restaurant would be difficult without a menu, which tells you the dishes being served, how they're prepared, and how much they cost—a menu is an indispensable communication tool. Using a DVD also requires menus; they power a DVD's interactivity. Without well-designed and complete menus, users won't be able to reach your DVD's content—or won't even know what's available to them.

Earlier this year, Apple released a new tool for making DVDs: DVD Studio Pro (\$999; 800/692-7753, [www.apple.com](http://www.apple.com)). It's a valuable resource for professionals, but the application provides no way to create menus; you can add interactivity only to menus created elsewhere. This may seem odd, but authoring a professional-level DVD, like HTML editing, involves assembling final elements: the video and audio should already be compressed, and the menus already complete.

So if you don't make your menus in DVD Studio Pro, where should you make them? In the industry standard: Adobe Photoshop (800/833-6687, [www.adobe.com](http://www.adobe.com)). The following steps illustrate how to efficiently build a DVD menu in Photoshop 6.0, but the basic instructions work in versions 4.0, 5.0, and 5.5, as well. Any static menu can be built on these steps; the complexity of the artwork is up to you. **m**

ANTON LINECKER is a video technical advisor and writer based in Los Angeles.

# 1

**Make Your Background** If interactive buttons are the brains behind DVD menus, backgrounds are the beauty. Though there are a few technical restrictions to keep in mind, backgrounds can be as simple or as elaborate as you wish. In this example, we start by making a background for a fictitious training DVD called "Scuba Safety."

In Photoshop, create a new project with an image size of 720 by 540 pixels and a resolution of 72 pixels per inch. This approximates the way your menu will eventually look on a TV screen. Choose the RGB mode.

Choose a color for the background, and fill it in using the Paint Bucket tool (under the Gradient tool in Photoshop 6). This gives you a base to work on, even if it's only temporary.



Place and size the images you want on your menu background **A**. Separate layers make the elements easier to manage in Photoshop. (Layers also add functionality to a menu once it's imported into DVD Studio Pro.)

TVs crop the outer edges of a picture. To avoid having important information cut out of your image, keep it away from the outer 10% or 20% of the image area. The middle space is called the *title safe area*.

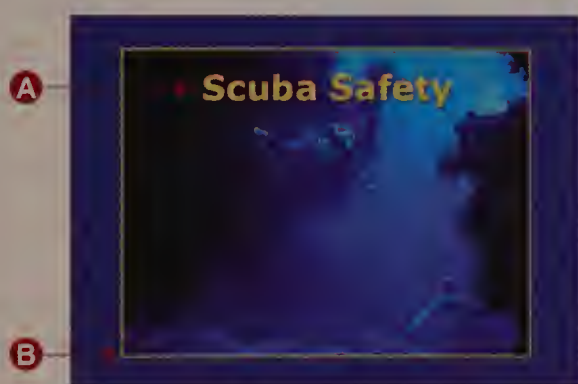
Once you have the background you want, flatten the image (Layer: Flatten Image).



# 2

**Design Your Title and Buttons** Adding a title is straightforward; buttons are a little more complex. Clicking on a button in a DVD menu starts an event, such as playing a movie, displaying a picture, or changing languages. Although you add the action in DVD Studio Pro, you make the static image of the button in Photoshop.

With the Text tool, create and place the DVD title **A**. Overly thin fonts tend to flicker when displayed on a TV, so make sure your type has enough heft. You may want to add a drop shadow (Layer: Layer Style: Drop Shadow).



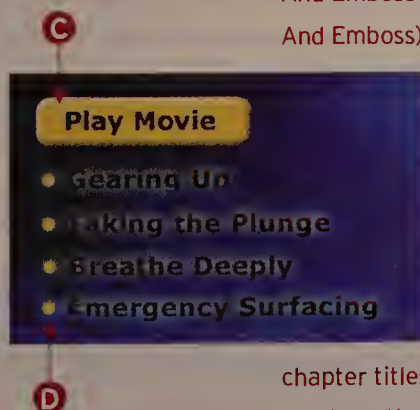
Lines are another potential problem. Make horizontal lines at least 2 pixels thick **B**, or they'll flicker.

For the first button, set the foreground color, making sure to avoid overly saturated colors, which can cause problems on NTSC displays. (NTSC is a video standard used in the United States.) Although buttons can be any shape, for this example, we selected the Rounded Rectangle tool and drew our button.

In the real world, buttons are usually raised from a surface. To imitate this look in the 2-D world of a DVD menu, give your button a raised appearance **C** by applying the Bevel And Emboss effect. (Layer: Layer Style: Bevel And Emboss). So viewers will know the but-

ton's purpose, you need to identify it. Use the Text tool to create a title, size it, and position it over the button.

Text alone can be a button. With the Text tool, we created chapter titles **D** and made the text stand out from the background (Layer: Layer Style: Outer Glow).

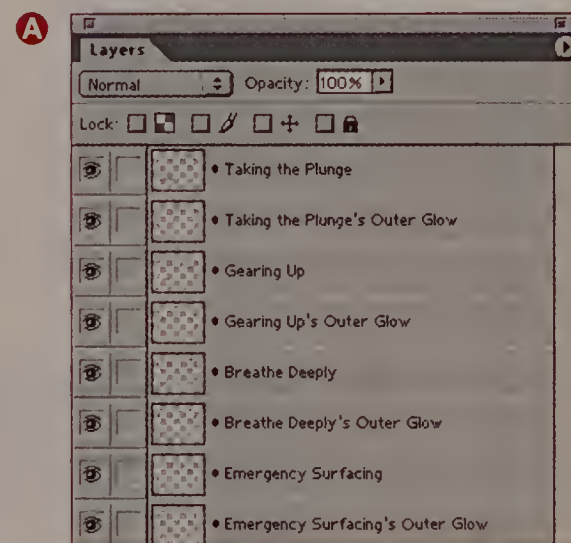


# 3

**Link and Merge Layers** DVD Studio Pro doesn't recognize effects layers. You have to *rasterize* text and layer effects to make them visible on your finished DVD. (In previous versions of Photoshop, this process was called *rendering*.)

Under the Layer menu, choose Rasterize and then select All Layers.

Next, select each layer that has layer effects, and choose Layer: Layer Style: Create Layer. This separates the effects layers from the target layer **A**.



Link each layer with its effects layer. Click on the text layer so it's the active layer; then pick Merge Linked from the Layers Menu **B**.

When merging the text (in our example, *Play Movie*) onto the rounded rectangle, include the text and effects layers to complete the button **C**.



Finally, link your title and background image layers together and merge them.

*continues*



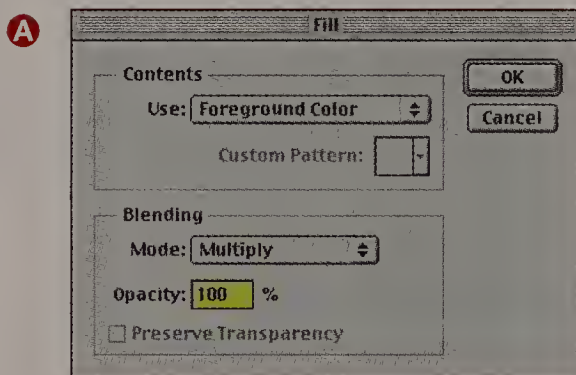
# 4

**Add Layers and Button States** In DVD Studio Pro, menu buttons have three states: normal, which is the default display; selected, when the remote control passes over the button; and activated, when the user has chosen the button. You can emphasize each state with different visual effects that exist as individual layers in the Photoshop file.

In step 2, you created your buttons' normal states. To differentiate the selected and activated states, add color casts.

To create a selected state for the Play Movie button, we duplicated the layer and called it "Play Movie-Selected." (This naming convention helps when you load the file into DVD Studio Pro.)

First, you'll set your foreground color. Go to Edit: Fill, and choose Foreground Color from the Contents pop-up menu **A**. As the Blending mode, select Multiply so the button's text will show through.



Duplicate the button layer again. We called this layer "Play Movie-Activated" and used a different color fill. You can even add an outer-glow effect in the same color if you want the button to appear to flash when activated on screen **B**.

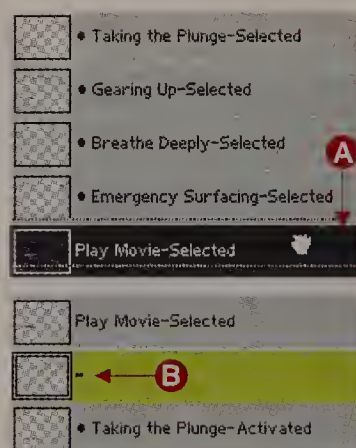


Repeat this process for the text buttons, but use the Normal Blending mode for the fill so the black text will also fill. Be sure to rasterize all effects and merge them with their layers. You should now have three separate layers for each of your buttons.

# 5

**Check, Resize, and Save** You have built your DVD menu. Now you must prepare it to be imported into DVD Studio Pro.

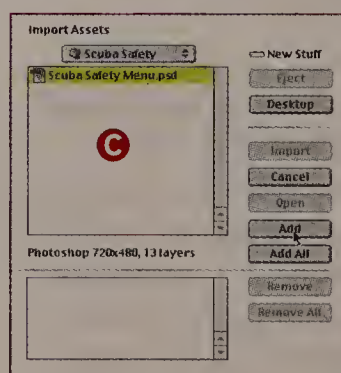
Check your work. Make sure that you've rasterized your layers and your text, and that each layer is properly identified.



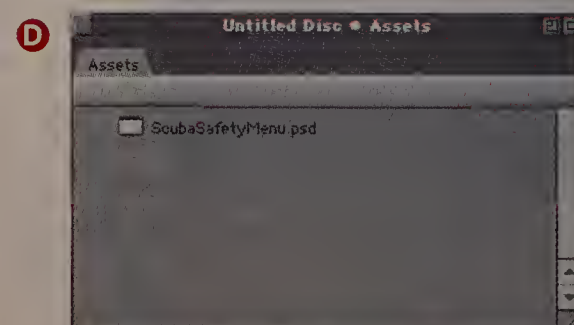
Group your layers in button clusters (normal, selected, and activated) by clicking and dragging their titles in the Layers palette **A**.

Add new, blank layers between your button groups and name them "-" (hyphen) **B**. These blank layers will appear as dividers when you import the menu into DVD Studio Pro and will help you manage your buttons.

Next, resize the overall image. Under the Image menu, choose Image Size. Set the image size to 720 by 480 pixels. You will notice that this distorts your picture slightly, squeezing it vertically. This is normal. NTSC video is displayed at 720 by 480, but it uses non-square pixels. When you see the finished DVD displayed on a TV screen, the menu will be the correct size.



Finally, save the resized static menu, launch DVD Studio Pro, choose the File menu's Import command (⌘-I), and navigate to the Photoshop menu file **C**. Click on Add; then click on the Import button. Now the menu is in your Studio Pro Assets bin **D**, ready for you to add interactivity and make it functional.






Hand-drawn flowchart on a yellow sticky note illustrating a distribution model:

- Manufacture** (two boxes) and **mini** lead to **Chips**.
- Chips** leads to **Distributor** (two boxes).
- Distributor** leads to **Electronics Store**, **Post**, **Cell**, and **Chain Store**.
- Customer** (house icon) is at the top, with arrows pointing to **Warranty** and **comp. idc?**.
- Annotations include: "Is it gonna work?", "Who's P.O.D?", and "What about res. res?".

A hand-drawn logo on a yellow background. At the top, a simple line drawing of a person's head and shoulders is shown in profile, facing left. The person has a wide, toothy smile and is wearing a suit jacket. They are holding a briefcase in their right hand. The briefcase is rectangular with a handle and has the letters "CB" written on it. A large, thick, curved arrow starts from the bottom of the briefcase and points downwards and to the right. At the end of the arrow is a horizontal banner with a slightly wavy border. Inside the banner, the text "crucial.com" is written in a simple, lowercase, sans-serif font.



**for today's most popular systems**

©2001 Micron Semiconductor Products, Inc. All rights reserved. Crucial Technology and the Crucial logo are trademarks of Micron Technology, Inc., and Micron is a registered trademark of Micron Technology, Inc. All other brands and names used herein are the property of their respective owners. Crucial Technology is a division of Micron Semiconductor Products, Inc. Phone 208-363-5500. Fax 208-363-5501. E-mail [crucial.sales@micron.com](mailto:crucial.sales@micron.com). Crucial Technology is not responsible for omissions or errors in typography or photography.

**crucial**  
TECHNOLOGY  
*A Division of Micron*

## The Memory Experts™



# Take Command of Mac OS X

## *The Command Line Makes Your Mac More Powerful*

Underneath its candy-coated Aqua interface, Mac OS X is based on Unix, an operating system that dates back to 1969. Unix and its archetypal user interface, the command line, look alien to many Mac users. Instead of using graphic methods such as clicking and dragging, you interact with the command line via terse, cryptic text. The commands and responses may be bewildering at first, but even the most visually oriented user should consider learning this lingo—some tasks can be accomplished much more quickly in the command line, and some are possible *only* in the command line.

In OS X, you reach the command line through an application called Terminal. This article, a collection of tips, will introduce you to Terminal and some essential Unix commands. Future articles will build on this knowledge, but if you find you're immediately thirsting for more, go to our Mac OS X resource page at [www.macworld.com/subject/macosex](http://www.macworld.com/subject/macosex).

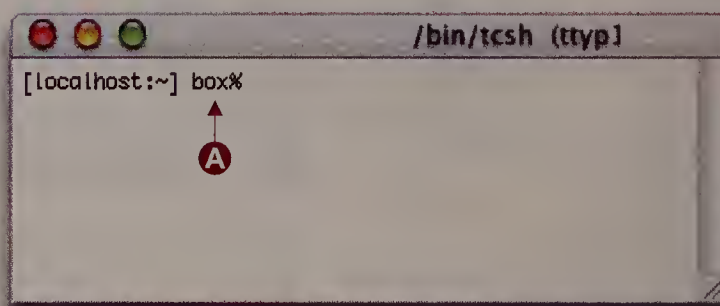
Just keep in mind that the command line is serious business. Even experienced users occasionally wipe out entire directories (and their contents) by accident. It's easy to overwrite existing files. And there is *no undo command* here. Always double-check what you're about to do so you avoid mishaps. **m**

Contributing Editor STEPHAN SOMOGYI thinks the addition of the command line to the Mac OS tool chest is a feature, not a bug. As with any power tool, though, appropriate protective gear should be worn at all times.

# 1

**Find Your Way** Before you can manipulate files and folders, you need to know how to get to them. Instead of double-clicking on folders to look inside, you have to tell the command line which folders to go to and which files to enumerate.

When you launch Terminal, you're greeted with a line of text that ends in a % (percent) character **A**. This line of text, the *prompt*, indicates that the software that interprets your commands (the *shell*) is ready.



Every time you launch Terminal, you start from your OS X Home directory. To see which files are in the Home directory, enter **ls**—short for “list directory contents”—after the prompt, and press return.

In the traditional Mac OS, when you want to copy or duplicate a file, you first open its folder in the Finder. To do the same using Terminal, enter **cd**—short for “change directory”—in the command line. If you have a subfolder named “clam” in your home folder, entering **cd clam** will change the current working directory to that subfolder. To then list its contents, type **ls**.

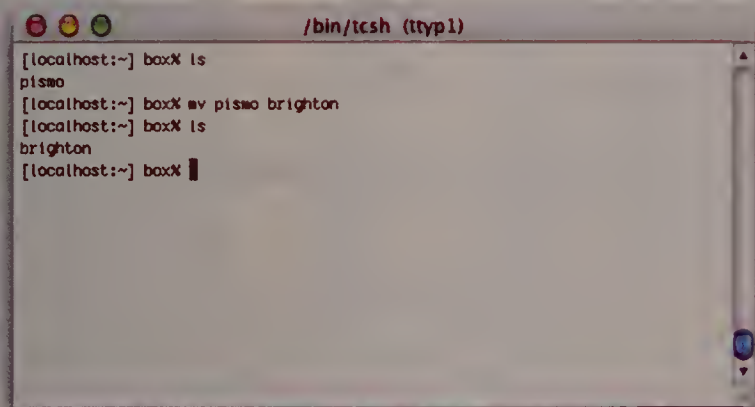
If you want to move back up through the folder hierarchy, you can use **cd ..**—two periods mean “the directory above” when used as a directory name. A single period means “the current directory.”



# 2

**Manipulate Your Files** Now that you can examine your files via the command line, you'll want to do things with them.

You use one command both to move files to other folders and to rename them: **mv**, short for "move." If you have a file named "pismo" that you want to change to "brighton," type **mv pismo brighton** and press the return key. But first make sure you don't already have a file by that name in the same location—if you do, it will be overwritten.



```
/bin/tcsh (tty1)
[localhost:~] box% ls
pismo
[localhost:~] box% mv pismo brighton
[localhost:~] box% ls
brighton
[localhost:~] box% █
```

When you want to copy a file (rather than move or rename it), use the **cp** command, which, like the **mv** command, wants to know what you're copying and where you're copying it to.

**TIP:** Traditional Unix is case sensitive: if a file or folder is called "Ocean," you must enter the capital *O* every time. Although the HFS+ file system used by Mac OS X isn't as strict, using consistent capitalization is a good habit to get into, especially because OS X can mount volumes (either over the network or locally) whose file systems are case sensitive (for example, UFS).

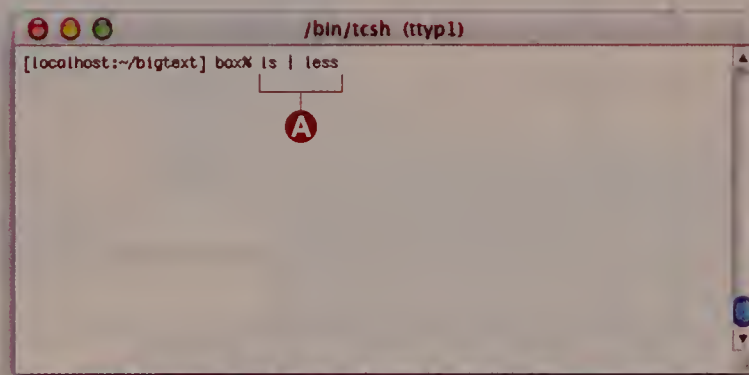
# 3

**Control Text Flow** Sometimes commands spew more lines of text at you than can fit on one screen. Fortunately, there are several ways to slow the onslaught and move through it.

The **less** command lets you move forward through reams of text one page at a time and also lets you move backward. This command is often handier than using Terminal's scroll bar.


When you combine commands by using a *pipe scheme*, you allow Unix to use one command's output as a second command's input. A pipe is represented by the **|** (vertical bar) character.

Say you want to list the contents of a directory that contains hundreds of files and folders. Enter only **ls**, and many of those files and folders will scroll past too quickly to read. The solution is to use a pipe, along with **less**, creating a code string that looks like this: **ls | less** **A**.



```
/bin/tcsh (tty1)
[localhost:~/bigtext] box% ls | less
A
```

This command tells the system to feed the result of **ls** to **less**, which then proceeds to display it one page at a time **B**.



```
/bin/tcsh (tty1)
00.txt
01.txt B
02.txt
03.txt
04.txt
05.txt
06.txt
07.txt
08.txt
09.txt
10.txt
11.txt
12.txt
:
```

*continues*



# 4

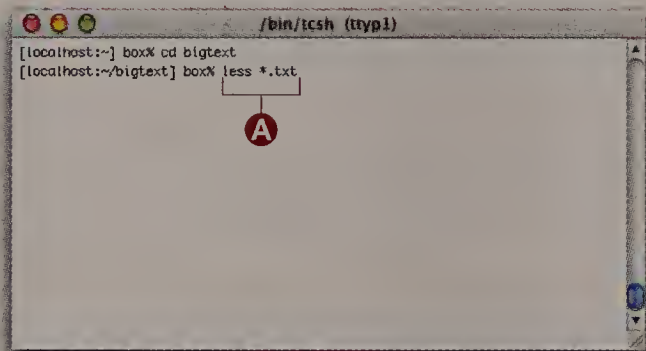
**Wild Cards** Wild-card characters are among the most powerful—and most perilous—features of the command line because they allow you to affect many files with one command. In this example, I combined some now-familiar commands with wild cards. When you explore wild cards, try not to be too all-encompassing: use them cautiously, particularly when deleting files, so you don't delete or damage files you care about.

When constructing commands, you frequently have to specify which file or files you want to affect. Instead of typing the name of each file, you can use a wild card to make the computer do the work. The \* (asterisk) wild card basically translates to "anything." Another useful wild card, ?, translates to "any single character."

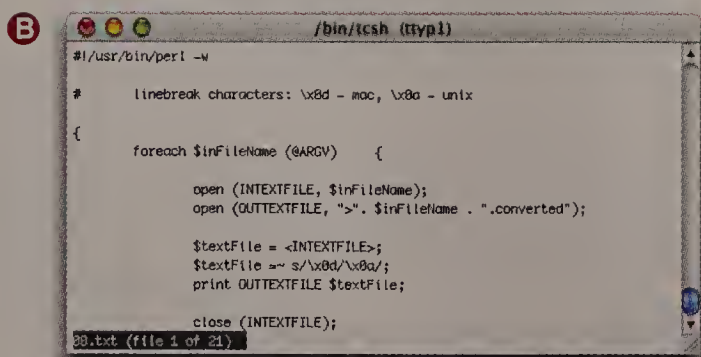
Suppose you have a folder called "bigtext" in your home directory; it's filled with text files, and you want to examine the contents of those files.

From your home directory, enter **cd bigtext**.

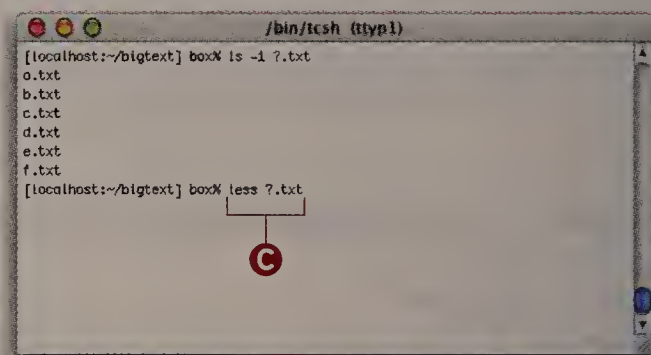
To view the contents of the files, enter **less \*.txt** **A**. Using a wild card this way displays every file in the current directory that has a .txt ending.



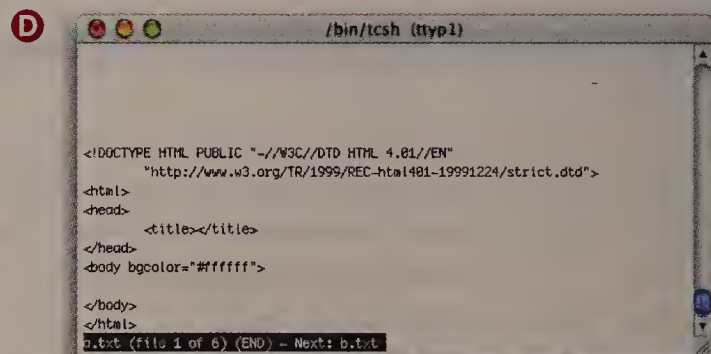
After you enter **less \*.txt**, press return. Though results will vary based on your files, you should see output similar to the example **B**.



But say we want to see only those text files with a single-character name. Simple enough: enter **less ?.txt** **C**, which displays any file with a name that ends in .txt and has only a single character before the period.



After you press return, you should see something like the output in the example **D**.



You can also combine wild cards: **less \*.t?t** shows you the insides of all files ending in .txt, .tot, and .trt, for example, but not those ending in .tt.

Many Mac files have spaces in their names, so it's useful to know how to handle this situation on the command line as well. If you don't show the shell that the space is part of the file's name, it will treat the space as a file-name separator. When a space is part of a file name, put the whole thing inside single quotation marks. **less 'Pearls ??txt'** will display the contents of files named "Pearls 00.txt," "Pearls 99.txt," and any similarly named files in between.



If someone tells you  
it takes only 5 minutes  
to install up to 300GB  
on the network,  
DON'T BELIEVE IT!"



## NEW Version 3.0 Delivers Even Greater Control, Security and Functionality

### Ease of Use

- Auto-sensing 10Base-T/100Base-TX Ethernet
- Automatic recognition of network types/clients
- Supports DHCP, BOOTP and RARP
- Configuration via Web browser

### Features

- Embedded OS (unlimited user license)
- Pentium-class processor
- Ultra ATA hard drives
- RAID 5, 1 or 0
- Easily supports 100 or more clients

v3.0 Disk space quota set by administrator

v3.0 Full functioning FTP server

v3.0 SNMP support

### Compatibility

- Simultaneous support for Windows 2000, NT, NetWare, UNIX, Linux and Macintosh networks and clients across TCP/IP, IPX, NetBEUI and AppleTalk networks

v3.0 Complete NFS 3.0 protocol support, symbolic linking of files and directories, Network Lock Manager and rpcinfo command support

### Network Backup

- Compatible with Windows and NetWare backup software, including Veritas Backup Exec, Computer Associates ARCserveIT and Microsoft backup software for Windows 95/98/NT/2000

v3.0 SMART predictive disk failure analysis

### Network Security

- Set access permissions at file and directory level
- Integrates with Microsoft Domain Controllers or local user list

### Guarantee

- Unconditional 30-day money-back guarantee, plus 3-year parts and labor

### Price (MSRP)

Model 4100 (300GB)	\$4,499
Model 4100 (160GB)	\$2,699
Model 2000 (80GB)	\$1,399
Model 1000 (40GB)	\$799
Model 1000 (20GB)	\$499



**Snap!**  
appliances  
a Quantum company

[www.snapappliances.com](http://www.snapappliances.com)  
1.888.343.SNAP

**A-List**  
Best Products and Services  
For Every Business

Nov. 2000



Jan. 2001



Jan. 2001



Apr. 2001

Snap Servers are engineered for one purpose: file sharing. That's why Don could have a Snap Server® 2000 up and running on a LAN in 43 seconds! "If I had the choice of installing an NT server for network storage or a Snap Server, I'd pick the Snap Server," says Don. "It's fast, easy and the browser configuration tool is very intuitive." To read Don's story and virtually install a Snap Server yourself, visit [www.snapappliances.com/install](http://www.snapappliances.com/install) today.

### Supports Macintosh Right Out of the Box!

For a fraction of the cost of an NT file server, a Snap Server easily adds up to 300GB to your LAN – ideal for desktop publishing, multimedia production or as a graphics/image library. According to a recent PC Data report, 4 out of 5 workgroup Network Attached Storage (NAS) servers sold are Snap Servers and they are also the most awarded NAS product on the market today. So go with the industry standard. Snap Server.



# Mac OS X Secrets

We Mac users have long been proud that we don't have to type in commands to use our machines to their fullest. That's still true, but now that Mac OS X has opened up the Unix command line, we have all the tools necessary to take advantage of some powerful programming and scripting capabilities, so our Macs can do more of our odious work. And after all, isn't that the whole point of a computer?

Programming is a lot like cooking—a category of activities that spans a broad spectrum, from the complexity of *Iron Chef* to the culinary travesty of microwaving a hot dog. Programming and cooking both can be done at many different skill levels, but even amateur chefs can make tasty food, just as beginning programmers can create useful scripts. And like learning to cook, learning to write scripts may appear daunting at first.

In this column, the first of a series examining OS X's geekier innards, you'll learn how to use the popular scripting language Perl, which is built into OS X. We'll show you how to build a script that converts a Mac text file's line endings to line endings that Unix can interpret. (This will enable the use of Unix-based text-processing tools on the file's contents.) Although developing the script may seem like quite a bit of effort, the results will come in very handy if you ever need to convert multiple text files. (To learn more about specifying multiple files on the command line, see "Take Command of Mac OS X," *How-to*, elsewhere in this issue.) We hope that this example will serve as an appetizing taste of OS X's rich flavors.

## How to Write a Perl Script

First, you need to fire up a text editor such as OS X's TextEdit, BBEdit, or if you're already familiar with the command-line realm, one of the traditional Unix text edi-



tors such as pico or vi. Then jump right in by typing the following line:

```
#!/usr/bin/perl -w
```

This first line announces to the operating system that it's dealing with a Perl script. The `-w` at the end of the line tells Perl that it should be particularly stringent about its interpretation of the script and display warnings if it encounters code that it considers suspect. Get yourself in the habit of adding `-w` to your scripts: doing so will often help you discover and fix scripting

problems before they become a pain in the neck.

**# linebreak characters: \x0d - Mac, \x0a - Unix**

In this line, `#` indicates a comment for use by the author of the script or someone else reading it, so Perl will ignore the rest of the line. This comment explains the codes for the Mac and Unix line-break characters. Later, outside of the comment, the `\x` notation will tell Perl that we're using hexadecimal numbers to represent line endings.

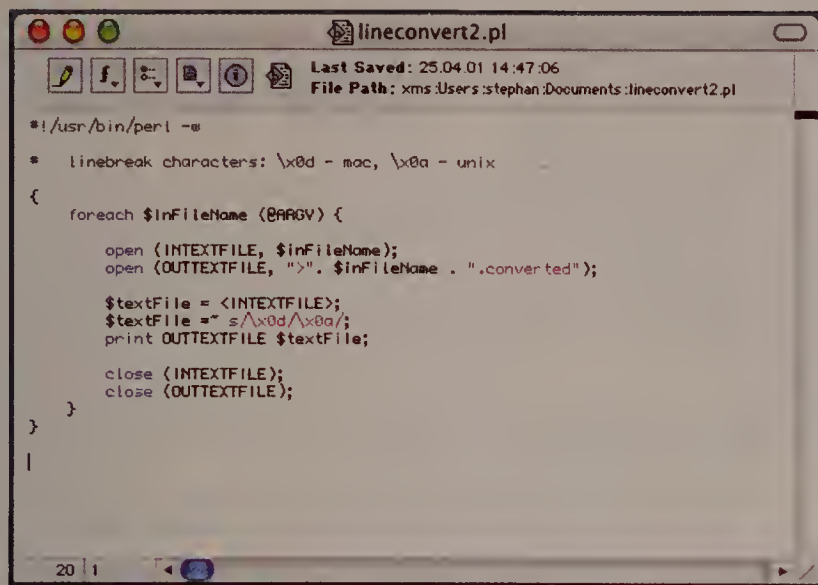
```
{
```

Perl uses braces (sometimes called "curly brackets") to group pieces of code. This outermost set of braces in this script is an optional visual indicator of where the script's main part begins and ends.

```
foreach $inFileName (@ARGV) {
```

The script uses this `foreach` loop to work through all the names of files that the script will convert to Unix-readable text. Each individual file name is stored in a separate





**Perls of Wisdom** Writing a Perl script in OS X's command line can be easier than it looks if you follow our instructions.

element of an array—a collection of variables—called `@ARGV`, which Perl creates.

This line translates to “Take a file name from the `@ARGV` array, put it in the variable called `$inFileName`, and run the code enclosed in the following set of braces; continue doing this until you run out of file names in `@ARGV`.” In Perl, all variables begin with the `$` character except arrays (which are preceded by `@`, like `@ARGV`) and hashes.

```
open (INTEXTFILE, $inFileName);
```

This line tells Perl to open the file, whose name it has plucked from `@ARGV`, and create a reference to it, which we've named `INTEXTFILE`. We'll use this reference any time we have to read from this file; Perl wouldn't know which file we were referring to if we didn't name it explicitly.

```
open (OUTTEXTFILE, ">". $inFileName . ".converted");
```

This line creates the new file that will contain our converted text, and a reference called `OUTTEXTFILE`. The rest of the line contains the file's name; the `>` character is shorthand for “create the file” and doesn't actually affect the file's name. The variable `$inFileName` contains the name of the original file, and the script will add `.converted` to the end of its name (so the original is not overwritten). The periods between the elements of the file name tell Perl to combine them into a single string of text.

```
$textFile = <INTEXTFILE>;
```

This statement tells Perl to read the entire text file from `INTEXTFILE` and put it into the variable `$textFile`. Make sure the file isn't too big (larger than about 100K); even though OS X has Unix-style virtual memory, you can't assume that exorbitant amounts of memory are available.

### Now for the Heavy Lifting

This line does all the real work in the script and is consequently rather dense:

```
$textFile =~ s/\x0d/\x0a/;
```

Perl has a built-in search-and-replace function, represented by `s`. When invoking this function, you specify what it should search for and replace with; these two strings are bounded by `/` characters. We want to replace Mac line-end-

ing characters with the Unix ones, so those are the two strings we've used in the search and replace fields. Using `=~` tells Perl to perform the search and replace on the contents of `$textFile` and then put the result back into `$textFile`.

```
print OUTTEXTFILE $textFile;
```

Once the conversion's done, use the `print` function to write the contents of `$textFile` to your output file.

```
close (INTEXTFILE);
```

```
close (OUTTEXTFILE);
```

These final statements close the input and output files, to keep things tidy. Add two closing braces to end your bracketed chunks of code, and that's it.

When you're done, save this script into a file named “lineconvert.pl”—making sure to give this file Unix line endings. Then use the command line's `chmod` command to set the script's attributes, so the operating system knows it's an executable script. To do this, type `chmod 744 lineconvert.pl` into the command line. (To learn more about the `chmod` command, enter `man chmod` at the command-line prompt.)

### Using Your Perl Script

Say you have a Mac text file named “mac.txt” and you want its contents to have Unix line endings. You invoke your script by typing `./lineconvert.pl mac.txt` in the command line, and it performs the conversion. You end up with a file called “mac.txt.converted,” with contents that have Unix line endings. Ta-da! Now you can modify the script to create a Unix-to-Mac version, for example.

One of the many features you can add to your script is improved error handling. This is particularly important because errors outside of your control do occur, and you don't want them to destroy your data.

### Onward

Our example introduces a few of the ingredients in the large and well-stocked kitchen that is Perl programming. And Perl has countless uses beyond changing text files: it can fill the gaps between databases and Web servers to help you create dynamic Web sites. You can even use it to catalog your MP3 archive.

To explore Perl further, browse CPAN, the Comprehensive Perl Archive Network ([www.cpan.org](http://www.cpan.org)). If you find packages that seem useful, you may want to get your hands on *Learning Perl*, second edition, by Randal L. Schwartz and Tom Christiansen (O'Reilly & Associates, 1997). Using it as your beginner's cookbook, you'll soon be concocting Perl scripts that save you time and drudgery. **m**

A longtime MacPerl user, Contributing Editor STEPHAN SOMOGYI is no longer afraid of regular expressions.

**More Info:** [www.macworld.com](http://www.macworld.com)

For a list of helpful links to Perl resources on the Web, type `OSXSecretsPerl` in Macworld.com's Search field.



# Mac 911

Ah, July, a lovely month in the Northern Hemisphere. A month when we can enjoy the pleasures of outdoor dining, risk setting the neighborhood on fire with an errant bottle rocket, and smile broadly at the wonders revealed during the East Coast installment of Macworld Expo. And speaking of eating, burning, and beaming, that's exactly what we'll discuss in this month's *Mac 911*.

## Gobbled Gigabytes

**Q.** My hard drive is shrinking right in front of my eyes! I thought I had 3.5GB of available disk space, but my Mac now tells me that I have less than 1GB. What's up?

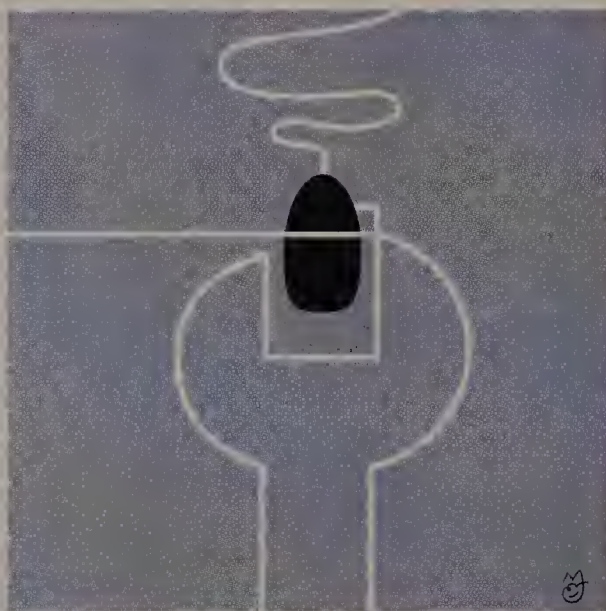
"BRUCEFPA"

*Macworld.com forums*

**A.** At first blush, this is indeed a scary problem, Brucefpa (Fulsome Podiatrist's Assistant? Feverishly Pulsing Acquaintance?). Thankfully, only a couple of factors can make disk space disappear in this way, and the tools for putting things right are only a download away.

Disk space doesn't just disappear—a file or group of files has scarfed up those gigabytes. More often than not, the scarfer in question is some kind of invisible temporary file. Adobe Photoshop 6.0 is notorious for creating enormous temporary files and failing to give them the boot once the application shuts down. Likewise, Microsoft Word and the classic Mac OS (version 9 and earlier) can create—and neglect to dispose of—their own invisible temporary files.

There are a few ways to get rid of these disk-space thieves. You can use Sherlock to find the invisible files on your hard drive and delete them by hand, but I wouldn't recommend it; before I trash invisible files, I want to know a bit more about them. So my first line of attack is SearchWare Solutions' Eradicator ([www.swssoftware.com](http://www.swssoftware.com)). This simple—and free—application reveals the contents of the invisible Temporary Items and Cleanup At Startup folders



and allows you to selectively delete files within them. If you'd like more control over what you trash and what you keep, check out Monkey-Bread Software's \$15 Ghost Hunter ([www.monkeybreadsoftware.com](http://www.monkeybreadsoftware.com)). Ghost Hunter allows you to see all the invisible items on your Mac's hard drive and to move, trash, and make these files visible from within the program.

Be careful when vaporizing files: unless you know what you're doing, it's best to delete only those files inside the Temporary Items folder

found at the root level of your hard drive. And do this only when other applications aren't running—otherwise you could kill a file that another application is using.

If Photoshop 6.0 is overwhelming your hard disk with undeleted temporary files, you should be able to solve the problem simply by downloading the free Photoshop 6.0.1 update ([www.adobe.com/products/photoshop/main.html](http://www.adobe.com/products/photoshop/main.html)). This update reportedly kills the temp files that Photoshop 6.0 leaves behind.

Finally, Bruce, there's another possible explanation for your disappearing disk space. Maybe, like me, you've installed Power On Software's Rewind (\$80; 800/344-9160, [www.poweronsoftware.com](http://www.poweronsoftware.com)), a utility that can restore your Mac to a previous state. Rewind causes disk space to disappear when it's updating its invisible cache file. If you leave your Mac idle for ten minutes, that drive space should be restored to the level you set in Rewind's preferences. On a couple of occasions, however, Rewind



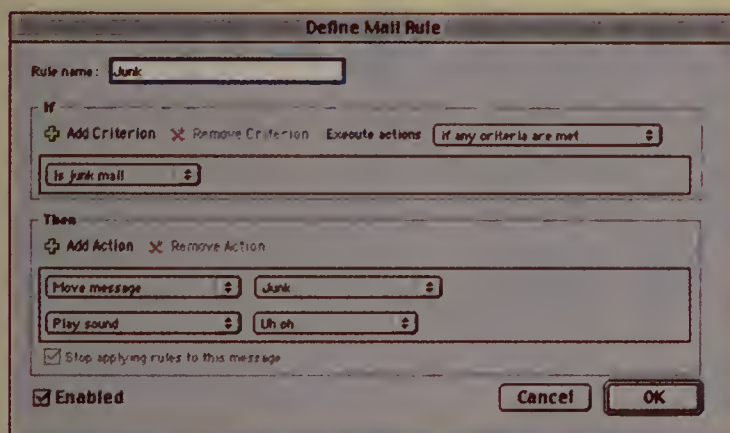
## Tip of the Month

If you have Microsoft Outlook Express configured to run in the background and check your e-mail at regular intervals, you may be annoyed when you hear the new-mail alert, switch to Outlook Express, and discover that you've just received another piece of spam.

To avoid such false alarms, create a new folder and call it Junk. Next, create a Mail Rule that moves any mail Outlook Express designates as junk mail to this folder. Finally, add a Play Sound action that plays a different sound when a message appears in this folder (see "Rule Out Spam"). When you next hear that sound, you'll know that there's no need to rush to read your mail.

CHARLES MOON  
Arcata, California

For more information about Outlook Express junk filtering, go to [www.macworld.com/2000/10/howto/corral.html](http://www.macworld.com/2000/10/howto/corral.html).—Ed.



**Rule Out Spam** Use Microsoft Outlook Express's Rules to move spam to its own folder and issue a unique alert sound.

never did relinquish the disk space on my PowerBook, and I had to uninstall the program to purge its gargantuan database.

### Disc Burner Doesn't

**Q.** I can't seem to make my Yamaha CRW8824S internal CD-RW burner work with Apple's Disc Burner. It's on the Disc Burner compatibility list, so what's the problem?

BETH GORTON  
San Antonio, Texas

**A.** I can easily clear this up, Beth. The letter S that follows the drive's model number indicates that it's the SCSI model, and despite Apple's claims of compatibility, you won't be able to use Disc Burner's Finder interface to burn data CDs. As you've no doubt discovered, when you attempt to install Disc Burner on your Mac, an error message waggles its virtual finger and tells you that Disc Burner is incompatible with your Mac. Your SCSI CD-RW drive is suffici-

ently compatible to burn audio CDs from within iTunes, but for data CDs you'll need to use the copy of Toast that was undoubtedly bundled with your burner.

### Infrared Printing

**Q.** I just got a new PowerBook G4 and would like to use its IrDA port to print to my old HP LaserJet 5MP. How do I set this up?

TED LANCASTER  
Akron, Ohio

**A.** Funny you should ask, Ted. It just so happens that a friend who dropped by the house the other day posed the very same question. He had come by to gloat over his new Titanium PowerBook G4, and, spying the infrared port that adorns the HP LaserJet 5MP printer sitting in my office, he asked, "Do you suppose I could print from my PowerBook to that printer via infrared?"

Explaining that such a procedure is devilishly difficult to set up, I persuaded the poor sap to leave his PowerBook with me for a few days. After spending those days playing Oni with his Titanium portable and relishing every double punch and flying kick, I realized that if I didn't actually demonstrate how to print via infrared when he returned that afternoon, he'd know I'd hoodwinked him. Here's how simple this operation really is:

Open the AppleTalk control panel and select Infrared Port (IrDA) from the pop-up Connect Via menu. Now launch the Desktop Printer Utility—it's inside the Utilities folder, which is in the Applications (Mac OS 9) folder at the root level of the PowerBook's hard drive. In the New Desktop Printer window, select Printer (Infrared) from the list of printers and click on OK.

Move the PowerBook to within three feet of the printer's infrared port (making sure that the two machines' infrared ports face each other), and click on the Auto Setup button in the resulting window. After a fair bit of cogitation, the Desktop Printer Utility may ask you to select a PPD file if it doesn't find a native HP printer driver. Select a basic printer description such as LaserWriter, click on OK, name your printer, and save it to the desktop. When you next wish to use this printer, just choose AppleTalk's Infrared setting, point the PowerBook at the printer, and proceed as you normally would. **m**

To get a gander at Contributing Editor CHRISTOPHER BREEN's mug, visit Breen's Bungalow, the video feature he produces each month for the CD-ROM bundled with newsstand copies of *Macworld*.

Share tips and discuss Mac problems with other Mac users in the Mac 911 forum ([www.macworld.com/subject/mac911](http://www.macworld.com/subject/mac911)). Also send tips by e-mail to [mac911@macworld.com](mailto:mac911@macworld.com). We pay \$50 for tips selected for publication in *Macworld*. All published submissions become the sole property of *Macworld*.

Shareware and freeware mentioned in *Mac 911* are available from ZDNet's Macdownload.com ([www.macdownload.com](http://www.macdownload.com)).



**Technology for Life**

# **Macworld**

## ***Conference & Expo***™

Conference Programs & Workshops  
**July 17-20, 2001**

Exposition  
**July 18-20, 2001**

Jacob K. Javits Convention Center  
**New York City**

Register Online Today!

**[www.macworldexpo.com](http://www.macworldexpo.com)**

Call Toll Free 1-800-645-EXPO

Owned and Managed by  
 **IDG**  
WORLD EXPO

© 2001 IDG World Expo. All rights reserved.  
All other trademarks contained herein are  
the property of the respective owners.



**Register by June 18, 2001 to SAVE \$150  
on a Macworld Conference & Expo SUPER PASS!**



Register Online at [www.macworldexpo.com](http://www.macworldexpo.com)

with your Priority Code: **A-MW3**

by June 18, 2001 to receive Special Savings!

*Our long-standing dedication to technology development merits **Macworld Conference & Expo** as the ultimate venue for all levels of Mac users, professionals, enthusiasts and the Mac-curious to gather and experience the excellence of Mac technology!*

## Insightful Conference Programs!

The world's best and most up-to-date Macintosh training program keeps getting better! With over 100 educational sessions and over 13 in-depth workshops to choose from, Mac users of all levels can benefit from participating in one of Macworld Conference & Expo's conference programs.

### Dates & Times:

#### Keynote\*

Steve Jobs, CEO, Apple

Wednesday, July 18, 2001

9:00 am – 10:30 am

#### Feature Presentations\*

Kevin Browne, General Manager, Macintosh Business Unit, Microsoft Corporation

Thursday, July 19, 2001

9:00 am – 10:00 am

TBA

Friday, July 20, 2001

9:00 am – 10:00 am

\*Keynote and Feature Presentations are open to Super Pass, Pro Conference, Users I & II and Workshop attendees ONLY. Seating is on a first-come, first-served basis.

#### Workshops

Tuesday, July 17, 2001

10:00 am – 5:00 pm

#### Macworld/Pro Conference Program

Wednesday, July 18 –

Friday, July 20, 2001

#### Macworld/Users Conference Program

Wednesday, July 18 –

Friday, July 20, 2001

#### MacBeginnings

(Open to ALL registered attendees)

Wednesday, July 18, 2001

11:00 am – 12:00 pm

2:00 pm – 3:00 pm

Thursday, July 19, 2001

11:00 am – 12:00 pm

2:00 pm – 3:00 pm

Friday, July 20, 2001

11:00 am – 12:00 pm

#### Exposition Hall

Wednesday, July 18 –

Thursday, July 19, 2001

10:00 am – 6:00 pm

Friday, July 20, 2001

10:00 am – 4:00 pm

## Workshops

Tuesday, July 17, 2001

10:00 am – 5:00 pm

The week begins with 13 astounding, full-day workshops that provide in-depth training on key products and technologies. You can find full workshop descriptions at [www.macworldexpo.com](http://www.macworldexpo.com).

**WA** Practical Introduction to Mac Networking

**WB** Integrating Professional Publishing Tools

**WC** Managing Shared Macintosh Computers with Apple Macintosh Manager

**WD** The QuickTime Professionals Workshop

**WE** Your First Mac OS X Workshop

**WF** Getting Started with AppleScript

**WG** JavaScript and Dynamic HTML Wizardry

**WH** The Filemaker Workshop

**WI** DV Revolution Workshop — Digital Video Production from Concept to Completion

**WJ** Final Cut Pro Workshop

**WK** Getting Started in Interactive Development

**WL** PDF Secrets for Print or Web

**WM** Web Animation Essentials, Tools and Techniques

**WN** Secrets of Shooting Great DV

**WO** Mac OS X in Depth

**WP** TBA

Workshops are subject to change, please visit [www.macworldexpo.com](http://www.macworldexpo.com) for the most up-to-date information.

Flagship Sponsors

**Macworld**

**Macworld.com**

**MacWEEK.com**

**MacCentral.com**



**www.macworldexpo.com ♦ 1-800-645-EXPO**

## **The most important Macworld Conference ever!**

### **Macworld/Pro Conference Program**

**Wednesday, July 18 –  
Friday, July 20, 2001**

Macworld/Pro offers the most sophisticated training available on Macintosh for the advanced users and skilled professionals. Six distinctive tracks include:

#### **Macintosh Networking and Communications**

This track presents techniques and technologies associated with deploying Macintosh LANs, WANs, and Internet/Intranet access. These technical presentations take you inside the protocols and services you encounter when deploying connected Macintoshes. Get the most of your network or make it state of the art — these tactical sessions will show you how.

#### **Mac OS X in Depth**

This track of advanced sessions takes you under the hood of Mac OS X — the new operating system for the Macintosh. You'll learn about Mac OS X's Unix heritage and why this is important for advanced usage and management mastery. Also covered are sessions on how popular add-on technologies like AppleScript and Java are affected by OS X. You'll hear about housekeeping issues in OS X such as backup and font management. Advanced topics on the advanced operating system — Mac OS X. Only available at Macworld/Pro.

#### **Professional Publishing**

Hear from industry experts how to be more profitable, efficient, competitive and employable in the creative arena. You'll gain knowledge that will help you run a leaner, meaner and more productive creative group. These sessions will show you market opportunities and provide practical advice to improve your bottom line.

#### **Application Spotlight: FileMaker Pro**

One of the most important and popular applications in the Mac universe is FileMaker Pro. We're pleased to present an Application Spotlight track exclusively for developers of this amazing tool. Spend 3 days with the FileMaker gurus covering advanced development techniques. Tips, tricks and inspiration galore in this hardcore track for the hardcore FileMaker developer.

#### **The Mac Manager Track**

The Mac continues to be a platform in transition. Organizations that depend on the Mac OS now are facing new software and hardware options that require a considerable amount of strategic planning to ensure successful deployment. This track features sessions that look at the needs of organizations using the Mac and present the methods, practices and technologies that are defining the role of the Macintosh manager.

#### **Digital Media**

The Mac is a mainstream tool in the digital media. Apple technology provides best-of-class tools to produce and deliver the highest quality content. Attend sessions in this track to hear from industry experts and top practitioners how to use these tools to create quality material and delivery experiences to your customers. This track mixes practical tools advice with brilliant industry perspectives to deliver a composite picture of deploying the Mac in the digital media arena.



**Register by June 18, 2001 to SAVE up to \$150  
on a Macworld Conference & Expo SUPER PASS!**





# Macworld Conference & Expo/New York 2001 • Technology for Life

## Macworld/Users Conference Program

**Wednesday, July 18 – Friday, July 20, 2001**

The Macworld/Users Conference continues to be one of the best educational values anywhere, offering over 80 educational sessions on a variety of exciting topics presented by industry experts!

Many sessions are for:

- Creative Professionals
- Small Business Owners
- Musicians
- Educators

Mac users and enthusiasts can learn about

- Mac OS X — your first taste!
- Desktop Movies
- Digital Photography
- Tips about your Favorite Applications
- Digital Imaging
- ...and much more!

**After great success last summer, MacBeginnings returns to New York! Open to ALL registered attendees!**

## MacBeginnings

**Wednesday, July 18 – Friday, July 20, 2001**

To help you get even more out of your time at Macworld Conference and Expo, we've put together a lineup of educational sessions that are free and open to all Macworld Conference and Expo attendees. We'll be presenting tips, techniques and perspectives on the hottest topics in the industry, all presented by experts in their fields. Get a taste for what goes on in the Macworld/Pro and Users conference programs by attending these sessions and get more out of your Macintosh today!

*Visit [www.macworldexpo.com](http://www.macworldexpo.com) for continuous conference and event updates!*

## World-Class Exposition!

Excel in life with the knowledge and solutions found at Macworld Conference & Expo — the world's most comprehensive Macintosh OS event!

- Visit over 400 exhibiting companies
- Discover thousands of new products and services
- Test-drive the latest Mac OS X applications
- Participate in live demonstrations
- Evaluate the latest technological innovation

## Brand New for New York!

The hottest up-and-coming companies and developers in the Mac industry will be on display as you stroll down the **Special Interest Boulevard** and visit **MacTech Central**.

## Special Interest Boulevard

- Digital Media
- Small Business
- Sci-Tech
- Education/Assistive Technology
- 3D/Animation

**MacTech  
Central**

- Programming and development
- Web development
- Network administrator tools and services
- Other related products

*Visit [www.macworldexpo.com](http://www.macworldexpo.com) for the most up-to-date exhibitor list.*

## Register Today & Save!

**[www.macworldexpo.com](http://www.macworldexpo.com)**

**Register Online at [www.macworldexpo.com](http://www.macworldexpo.com) with your Priority Code: **A-MW3** by June 18, 2001 to receive Special Savings!**



# INDEX TO ADVERTISERS

Interact with the companies whose products and services are advertised in **Macworld**

ADVERTISER	INTERACT	PAGE NO.	ADVERTISER	INTERACT	PAGE NO.
AEC Software	aecsoft.com	10	MacZones	maczone.com	98-105
Alsoft	800-257-6381	38-39	MegaHaus	800-786-1184	111
American Power Conversion	888-289-APCC	13	MicroMat	800-829-6227	19
Apple Computer	--	C2-1	Microsoft	windowsmedia.com	54
APS Technologies	800-950-2015	106-107	MyFonts.com, Inc.	myfonts.com	42
Canon USA	canondv.com	25	NEC/Mitsubishi	necfp.com	11
Canon USA	canondv.com	37	Netscape	netscape.com	55
CDW Computer Centers, Inc.	800-509-4239	108-109	Olympus America	olympus.com	6-7
Crucial Technology	crucial.com	71	Quantum	snapappliances.com	75
Epson America, Inc.	1-800-BUY EPSON	2-3	Siggraph	siggraph.org/s2001	86
IDG World Expo	macworldexpo.com	80-83	TDK	tdk.com	26-27
J&R Computer World	800-221-8180	110	Thursby Software Systems	thursby.com	40
Kensington	kensington.com	BC	VST Technologies, Inc.	vsttech.com	12
MacMall/Creative Computers	800-222-2808	89-97	Xante Corporation	xante.com	C3
MacSoft	gtstore.com	45			



# PRODUCT INDEX

Looking for a specific product? Simply use Macworld's product index to find the page or the advertiser of the products which interest you. Then simply log on at [www.macworld.com/getinfo](http://www.macworld.com/getinfo) and receive all the product information you need.

PAGE NO.	ADVERTISER	GET-INFO	PAGE NO.	ADVERTISER	GET-INFO
----------	------------	----------	----------	------------	----------

## H A R D W A R E

### COMPUTER SYSTEMS

C2-1	Apple Computer	—
89-97	MacMall/Creative Computers	132
98-105	MacZones	72
12	VST Technologies, Inc.	74

### HARD DISK STORAGE

106-107	APS Technologies	56
71	Crucial Technology	—
111	MegaHaus	108

### MISCELLANEOUS

13	American Power Conversion	73
71	Crucial Technology	—
BC	Kensington	1

### MONITORS/ GRAPHICS BOARDS

11	NEC/Mitsubishi	20
----	----------------	----

### NETWORKING PRODUCTS

75	Quantum	—
----	---------	---

### PRINTERS

2-3	Epson America, Inc.	—
C3	Xante Corporation	113

### SCANNERS & DIGITAL CAMERAS

25	Canon USA	23
37	Canon USA	23
6-7	Olympus America	7

## M A I L O R D E R

106-107	APS Technologies	56
108-109	CDW Computer Centers, Inc.	2

110	J&R Computer World	57
89-97	MacMall/Creative Computers	132
98-105	MacZones	72
111	MegaHaus	108

## S E R V I C E S

### INTERNET PRODUCTS/SERVICES

55	Netscape	—
----	----------	---

### TRADESHOWS/CONFERENCES

80-83	IDG World Expo	—
86	Siggraph	—

## S O F T W A R E

### BUSINESS/PRODUCTIVITY

10	AEC Software	84
42	MyFonts.com, Inc.	139
40	Thursby Software Systems	124

### ENTERTAINMENT

45	MacSoft	30
54	Microsoft	—
26-27	TDK	—

### MULTIMEDIA

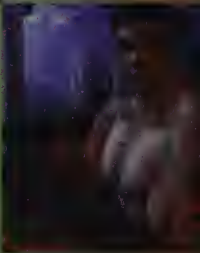
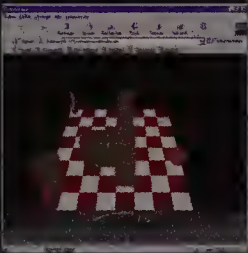
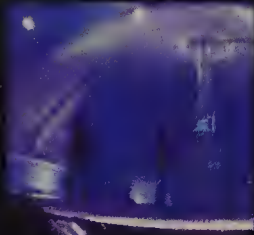
54	Microsoft	—
----	-----------	---

### UTILITIES

38-39	Alsoft	140
19	MicroMat	37



explore interaction  
and digital images



animation  
fine art  
game development  
graphic design  
interactivity  
research  
special effects  
streaming media  
video production  
virtual reality  
visualization  
web production  
digital art

*The World's Premiere*

*Conference and Exhibition  
on Computer Graphics*

*and Interactive Techniques*

**SIGGRAPH**  
2001

[www.siggraph.org/s2001](http://www.siggraph.org/s2001)

Los Angeles, California USA

CONFERENCE 12-17 AUGUST 2001 EXHIBITION 14-16 AUGUST 2001



Sponsored by ACM SIGGRAPH

Background image: Interacting in an IMR Museum of Color © 2000 Anne Morgan Spalter, Brown University | Square Images from Left to Right: 99.8A © 2000 Kenneth A. Huff | Water Dome Project © 2000 Yuki Sugihara and Susumu Tachi, The University of Tokyo | Behavioral Animation by Constraint-Based Adaptive Search © 2000 Philippe Codognet, Université Paris 6 and INRIA | YML-Art 2000, Kosovo © 1999 Steve Guynnup | A Realistic 3D Spatial/Symbolic Model of the Visible Human © 2000 Ulf Tiede, Bernhard Pflesser, Andreas Pommert, Martin Riemer, Thomas Schiemann, Rainer Schubert, Karl Heinz Hoehne, Universitäts Krakenhaus, Hamburg-Eppendorf | Geckos © 2000 Isabelle Marazzani, National Animation & Design Centre | Tekken Tag Tournament © 2000 Tatsuya Tāt Wakao, Namco Limited



Read Macworld product **reviews**,



**compare** products & prices,



and **buy smarter.**



Get it all in the **NEW** Macworld PriceFinder.

■ Lab-based Reviews   ■ Macworld Mouse Ratings   ■ 1000s of Mac Products   ■ Loads of Online Stores   ■ Out-the-door Pricing

**Now better than ever!**

**Macworld**  
**PriceFinder**

**review. compare. buy smarter.**

[www.macworldpricefinder.com](http://www.macworldpricefinder.com)



# Macworld

congratulates the winners  
of the **Macromedia Flash 5**  
DESIGN A SITE  
FOR USABILITY  
CONTEST

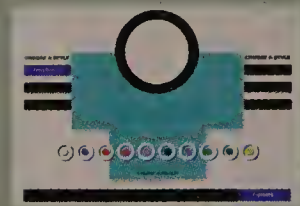
**The Macromedia Flash 5 Design a Site for Usability** contest garnered more than 700 entries from around the world, proving that designers everywhere are enthusiastic about creating usable sites with Macromedia Flash. We hope this contest helps raise awareness about important usability issues on the Web, and brings user-centric design into focus.

As a community we must continue to strive for the best user experiences possible on the Web, fusing great form (creativity) with exceptional function (usability). Together, we will shape what the Web can be.

We'd like to thank everyone who participated in the contest, offer our hearty congratulations to the winners, and say a special thanks to the judges.

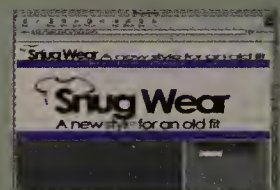
**Macworld**  
Read Macworld and Get Smarter

## NOVICE WINNERS



<http://www.vbailey.dircon.co.uk>

James Straffon



<http://members.telocity.com/~holsum/snug.html>

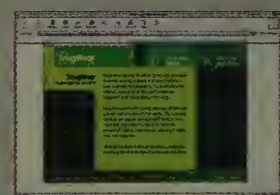
Lary Stucker



<http://www.mninter.net/~masimo/>

Matthew Plumstead

## PROFESSIONAL WINNERS



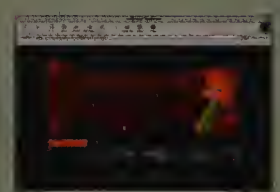
[http://www.proper-gander.com/flashcontest\\_stern\\_zefer/Obasemovie.html](http://www.proper-gander.com/flashcontest_stern_zefer/Obasemovie.html)

Michael Stern



<http://www.xyleminteractive.com/contest/snugwear/index.html>

Joe Mease



<http://members.dingobluenet.au/~pound/>

Billy Law



# iMacs **\$899!**

starting at

up to an  
**EXTRA  
128MB  
RAM FREE**  
on NEW  
iMacs!

**FREE!**

Epson Stylus Color  
7771 Printer with iMac.  
Regularly \$99

**EPSON**

**\$200**

**PRICE DROP!**

plus Extra 128MB  
RAM FREE!

Power Mac G4 Cube

**\$1,294!**

#952691 Display sold separately.

# MacMall

Since 1985



up to **256MB  
RAM FREE!**

PLUS...

**We'll Beat  
Any Price!**  
On any Mac computer.

Only 1" thin!  
15.2" screen!  
Only 5.3lbs!



**EXTRA  
256MB  
RAM FREE**  
on Titanium  
PowerBook G4s!

Titanium PowerBook G4s  
Speeds up to 500MHz!

**\$2,594!**

starting at



450MHz Power Mac G4  
Dual Processor only

**\$1,794!**

#952689

**Extra  
128MB  
RAM  
FREE!**  
on Power  
Mac D.P.

**EXTRA  
256MB  
RAM FREE!**  
on New  
Power Mac G4s!

Power Mac G4s  
Speeds up to 733MHz!

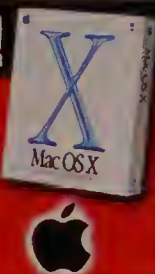
**\$1,694!**

starting at

**NOW SHIPPING!**

**Mac OS X**  
**\$119<sup>99</sup>!**  
only

#956212



**PowerBook  
Super Bundle!**

Top Loading Leather NotePac,  
Defcon Notebook Cable Lock,  
APC SurgeArrest,  
USB Cable.

**\$99<sup>99</sup>!**  
only



iomega  
Zip 100MB  
USB External  
Drive  
#851263

**\$99<sup>95</sup>!**  
only

Microsoft  
Office 2001  
Upgrade

#849861 Price  
after rebate.

**\$199<sup>89</sup>!**  
only



AirPort  
Base  
Station/  
Card

AirPort Base Station  
#57373

**\$299!**  
only

AirPort Card  
#57369

**\$99!**  
only



Dazzle  
Hollywood  
1394 DV  
#944700

**\$259!**  
only

Adobe Photoshop 6.0  
Upgrade  
#951597

**\$178<sup>99</sup>!**  
only



**HITACHI**

Hitachi 19"  
Display  
#73554

**\$289!**  
only



**Mac Upgrade Bundle!**

Turn your old Power Mac  
into a Power Mac G3 complete  
with USB and FireWire ports!

**\$199<sup>99</sup>!**  
only



Call for details  
#959055

**1-800-217-9492 macmall.com**  
Fastest Overnight Delivery! Order today—Get it tomorrow!



# NEW Power Mac Speeds up to 733

## The Digital Hub for Your Digital Lifestyle!

The Most Powerful Macintosh®—  
Burns CDs, Burns DVDs and  
Burns Pentiums!

The Apple® Power Mac™ G4 is  
hands down the most evolved  
computer—make that supercom-  
puter—on the planet.

### Technical Specifications

- Up to 733MHz with Velocity Engine™
- 256K on-chip level 2 cache
- 128MB or 256MB of PC133 SDRAM

### Communications

- 10/100/1000BASE-T Ethernet
- Built-in 56K V.90 modem
- Optional Airport™ capability

### Connectivity

- Four high-performance PCI slots
- Easy access to built-in bays and slots

- Two 400Mbps FireWire® ports for connecting up to 63 devices
- Two Universal Serial Bus (USB) ports for connecting up to 127 additional peripherals

### Storage

- 30, 40 or 60GB Ultra ATA/66 hard drive
- Three 3.5 inch hard disk drive expansion bays
- CD-RW or DVD-R/CD-RW combo drive with iDVD software
- Support for up to 2 internal ATA drives and up to 3 internal SCSI drives

### Cool Software

- Mac OS 9.1, iTunes and iMovie™ 2

# 256MB RAM FREE!

*with purchase of  
New Power Mac G4.  
Hurry! MacMall RAM  
Promotion ends  
6/25/01!*

## \$200 Price Drop!

### Power Mac G4 Cube Now Available with CD-RW!

- 450MHz G4 w/Velocity Engine and 1MB of backside level 2 cache
- 64 or 128MB memory
- 20GB hard drive
- DVD-ROM or CD-RW
- ATI RAGE 128 Pro 16MB
- 56K V.90 modem

# \$1,294!\*

as low as

Order	RAM	FREE RAM	TOTAL RAM	Drive	Price!	or as low as
#952691	64MB	128MB*	192MB	DVD-ROM	\$1,294	\$37/mo**
#957497	128MB	128MB*	256MB	CD-RW	\$1,594	\$45/mo**

\*Professional installation fee of \$30 required for free RAM. Hurry! MacMall RAM promotion ends 6/25/01.

\*\*Own this Power Mac G4 Cube for as low as \$37/mo. with the New MacMall EZ Payment Plan! Call for details.

## MacMall Spring Bundle!

Includes:  
Epson Stylus  
Color 777 Printer,  
Umax AstraNet e3420  
Internet Scanner, 4 Port USB Hub,  
USB Cable & Tomb Raider II



*all for only \$149.00!*  
with CPU purchase. #957303.



Apple® Power Macintosh® G4

1-800-217-9492 www.macmall.com

**G4s  
MHz!**

**New! 533MHz  
Dual Processor  
Now Available!**



Authorized Reseller



Apple Cinema 22" Display sold separately. \$2,999 #951070.

**Apple Power Mac G4 466MHz**

**\$1,694!**  
*only*

**Upgrade to  
GeForce3 Video!  
Call Now!**

Order	MHz	RAM	FREE RAM	TOTAL RAM	Hard Drive	Backside Cache	56K Modem	Drive	Gigabit Ethernet	Video	Price!	or as low as
#956215	466	128MB	256MB*	384MB	30GB	1MB L2	Yes	CD-RW	Yes	RAGE 128	\$1,694	\$48/mo**
#956216	533	128MB	256MB*	384MB	40GB	1MB L2	Yes	CD-RW	Yes	NVIDIA GeForce2 MX	\$2,194	\$62/mo**
#957453	533(2)	128MB	256MB*	384MB	40GB	1MB L3	Yes	CD-RW	Yes	NVIDIA GeForce2 MX	\$2,494	\$70/mo**
#957951	733	256MB	256MB*	512MB	60GB	1MB L3	Yes	CD-RW	Yes	NVIDIA GeForce2 MX	\$2,994	\$84/mo**
#956565	733	256MB	256MB*	512MB	60GB	1MB L3	Yes	DVD-R/CD-RW Combo	Yes	NVIDIA GeForce2 MX	\$3,494	\$98/mo**

\*Professional installation fee of \$30 required for free RAM. Hurry! MacMall RAM promotion ends 6/25/01.

\*\*Own this Power Mac G4 466MHz for as low as \$48/month with the **New MacMall EZ Payment Plan!** Call for details on the new MacMall EZ Payment Plan.

**Order Any Time! Open 24 Hours! Order Today by 10 p.m. EST—Get it Tomorrow by 10:30 a.m.!**

**We'll Beat Any Price! Call for Your Best Price!**

**On any Mac computer. Call for details AOL Keyword: MacMall Mention Your Priority Code: #ZMWD173**



# Titanium PowerBook Speeds up to 500

## Redefined Portability

### All-Inclusive Big-Screen Theater, Movie Studio and Music Library!

**T**he Titanium PowerBook G4™ redefines portable computing. With a titanium exterior, one of the lightest and most durable metals, the PowerBook G4 is only 1 inch thin and weighs just 5.3 pounds. Yet it offers powerful features, including notebook firsts such as a slot loading DVD-ROM drive and a stunning 15.2 inch display. The widescreen format display is capable of 1152 x 768 pixel resolution in millions of colors.

### Revolutionary design

- 1 inch thin and only 5.3 pounds
- Enclosed in a durable titanium case
- 15.2 inch widescreen active-matrix display with 1152 x 768 pixel resolution in millions of colors
- Slot loading DVD-ROM drive for playback of DVD-Video, DVD-ROM, DVD-RAM and CD-ROM

### Supercomputer performance

- Up to 500MHz PowerPC™ G4 processor with Velocity Engine™
- Up to 5 hours of run time
- 128MB or 256MB of PC100 SDRAM
- Easy expandability through FireWire®, USB and PC Card slot

### Amazing power!

Using a PowerPC G4 processor with the Velocity Engine and speeds of up to 500MHz, the PowerBook G4 crunches through digital video and renders huge Photoshop files faster than ever.

It has the kind of horsepower you've previously associated only with systems like the Power Mac G4. That's exactly the advantage you get with the PowerBook G4.

# 256MB RAM FREE!

*with purchase  
of Titanium  
PowerBook G4!*

#956072 Additional PowerBook Battery	\$129
#956071 Additional G4 AC Adapter	\$69

## PowerBook Super Bundle!

Includes: Top Loading Leather NotePac, USB Cable, Notebook Cable Lock, APC Notebook Surge Arrest.

all for only  
**\$99<sup>99</sup>!**

with  
PowerBook  
or iBook  
purchase  
#959246

**Mac Upgrade Bundle!**  
Turn your old Power Mac into a Power Mac G3 complete with USB and FireWire ports!  
**\$199<sup>99</sup>!**  
only  
Call for details #959055

**Microsoft Office 2001 Upgrade**  
**\$199<sup>89</sup>!**  
only  
#849861 Price after \$50 mfr. mail-in rebate. Offer ends 6/15/01.

**AirPort Station/Card**  
AirPort Card #57369  
**\$99!**  
only  
AirPort Station #57373  
**\$299!**  
only

**Adobe Acrobat 5.0 Upgrade**  
#957596  
**\$87<sup>99</sup>!**  
only

**NEW!**  
**Mac OS X**  
**\$119<sup>99</sup>!**  
only  
**ORDER NOW!** #956214



# Apple® Titanium PowerBook G4

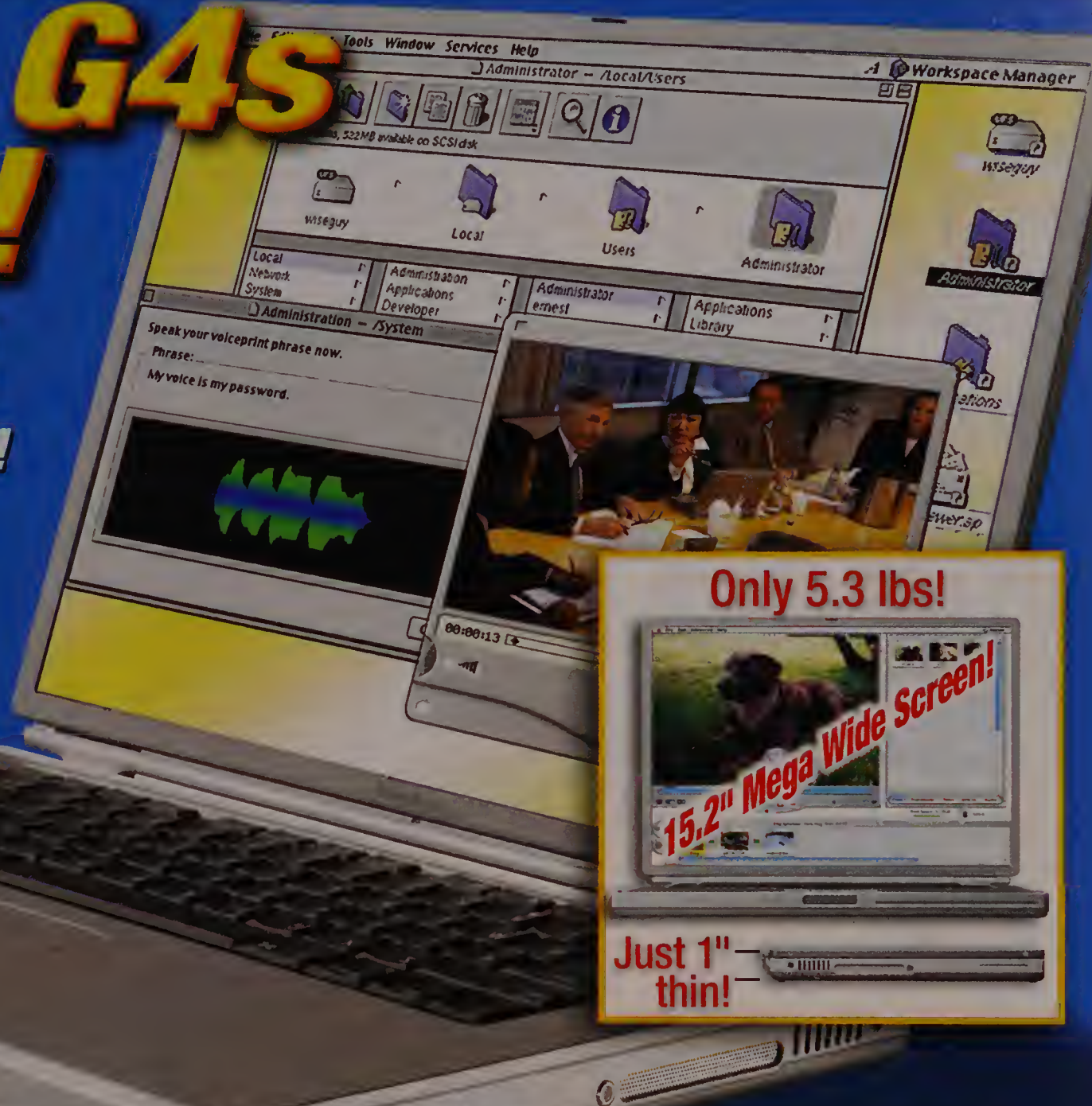
1-800-217-9492 [www.macmall.com](http://www.macmall.com)

# ook G4s MHz!

Only 1" thin!  
Just 5.3 lbs!  
15.2" screen!



Authorized Reseller



## Titanium PowerBook G4 400MHz

# only \$2,594!

Order	MHz	RAM	FREE RAM	TOTAL RAM	Hard Drive	DVD Drive	56K Modem	USB Ports	FireWire Ports	iMovie 2	iTunes	Mac OS 9.1	or as Price!	low as
#956566	400	128MB	256MB*	384MB	10GB	Yes	56K	Two	One	Yes	Yes	Yes	\$2,594	\$73/mo**
#956567	500	256MB	256MB*	512MB	20GB	Yes	56K	Two	One	Yes	Yes	Yes	\$3,494	\$98/mo**

\*Professional installation fee of \$30 required for free RAM. Hurry! MacMall RAM promotion ends 6/25/01.

\*\*Own this Titanium PowerBook G4 for as low as \$73/month with the New MacMall EZ Payment Plan! Call for details on the new MacMall EZ Payment Plan.

Order Any Time! Open 24 Hours! Order Today by 10 p.m. EST—Get it Tomorrow by 10:30 a.m.!

# We'll Beat Any Price! Call for Your Best Price!

On any Mac computer. Call for details. AOL Keyword: MacMall Mention Your Priority Code: #ZMWD173



# NEW iMacs with Speeds up to 600

## Work and Play Faster with New Speeds!

### iMac™ 400MHz G3 Processor Do more—right out of the box!

- 400MHz PowerPC™ G3 processor
- 64MB SDRAM; supports up to 1GB
- 10GB HD ■ 10/100BT ■ CD-ROM
- RAGE 128 Pro ■ 15" display
- Apple Pro Optical Mouse and Keyboard
- 2 FireWire® and 2 USB ports
- 56K ■ Harmon/Kardon Odyssey audio system
- Standard VGA output (15-pin mini D-Sub); support for video mirroring

### iMac 500MHz G3 Processor Greater built-in functionality!

- 500MHz PowerPC G3 processor
- 64MB SDRAM; supports up to 1GB
- 20GB HD ■ 10/100BT
- CD-RW ■ 15" display
- 16MB RAGE 128 Ultra
- 2 FireWire and 2 USB ports
- 56K ■ Harmon/Kardon Odyssey audio system
- Standard VGA output (15-pin mini D-Sub); support for video mirroring

### iMac 600MHz G3 Processor Faster performance!

- 600MHz PowerPC G3 processor
- 128MB SDRAM; supports up to 1GB
- 40GB HD ■ 10/100BT
- 16MB RAGE 128 Ultra
- 15" display ■ CD-RW
- Harmon/Kardon Odyssey audio system
- 2 FireWire and 2 USB ports
- Standard VGA output (15-pin mini D-Sub); support for video mirroring

### All new iMacs include†:

- Mac® OS 9.1 ■ AppleWorks 6 ■ FAXstf
- iTunes ■ QuickTime 4 ■ iMovie™ 2
- Palm Desktop ■ Bugdom ■ Nanosaur
- Cro-Mag Rally ■ Quicken Deluxe 2001
- Microsoft Outlook Express and Internet Explorer ■ Netscape Communicator
- 30 days free EarthLink Internet service

†Most applications are preinstalled, though some may require downloads. Product contains electronic documentation. Backup software is provided on CD-ROM.

up to  
**128MB  
RAM FREE!**\*

\*Professional installation fee of \$30 required for FREE RAM offer.

**FREE  
Epson Color  
Printer!**

\*After Epson \$69 mail-in rebate.  
See below for details.

All iMacs Come  
with the Apple  
Pro Keyboard  
and Apple  
Pro Mouse!

Indigo

**FREE Epson Stylus  
580 or 777i  
Color Printer!**

or receive a \$69 Epson mail-in rebate on  
any of these Epson printers with purchase  
of an iMac. Offer valid through 7/8/01.

- |                     |                              |                 |
|---------------------|------------------------------|-----------------|
| #951234 Stylus 580  | Price before rebate is \$69  | <b>*FREE!†</b>  |
| #953315 Stylus 777i | Price before rebate is \$99  | <b>*FREE!††</b> |
| #952102 Stylus 880i | Price before rebate is \$149 | <b>\$80†</b>    |
| #955839 Stylus 8    | Price before rebate is \$199 | <b>\$130†</b>   |

†After \$69 Epson mail-in rebate when purchased with iMac. ††After \$99 Epson and \$30 MacMall mail-in rebates when purchased with iMac.

**Corel Draw 8**  
#58775  
**\$99.99!**  
only with CPU purchase

**Diamond Rio 600  
32MB MP3 Player**  
#81950  
**\$149.99!**  
only

**NEW!**  
**Mac OS X**  
**\$119.99!**  
only  
**ORDER NOW!** #956214



# CD-RWs! MHz!



iMacs starting at

# \$899!\*



Indigo (#957490)

MHz	400
RAM	64MB
<b>FREE RAM</b>	<b>64MB</b>
TOTAL RAM	128MB
Hard Drive	10GB
CD-ROM	YES
56K Modem	YES
USB Ports	2
FireWire Ports	2
iTunes and iMovie 2	YES

## \$899!\*

or as low as \$26/month with the  
New MacMall EZ Payment Plan! Call for details.



Flower Power (#957493),

Blue Dalmatian (#957492), Indigo (#957491)

MHz	500
RAM	64MB
<b>FREE RAM</b>	<b>128MB</b>
TOTAL RAM	192MB
Hard Drive	20GB
CD-RW	YES
56K Modem	YES
USB/FireWire Ports	2
iTunes and iMovie 2	YES

## \$1,194!\*

or as low as \$34/month with the  
New MacMall EZ Payment Plan! Call for details.



Flower Power (#957496),

Blue Dalmatian (#957495), Graphite (#957494)

MHz	600
RAM	128MB
<b>FREE RAM</b>	<b>128MB</b>
TOTAL RAM	256MB
Hard Drive	40GB
CD-RW	YES
56K Modem	YES
USB/FireWire Ports	2
iTunes and iMovie 2	YES

## \$1,494!\*

or as low as \$42/month with the  
New MacMall EZ Payment Plan! Call for details.

\*MacMall RAM promotion ends 6/25/01. Price shown above does not include initial \$69 price of Epson Stylus 580 Printer (before rebate) and required \$30 professional RAM installation fee.

Order Any Time! Open 24 Hours! Order Today by 10 p.m. EST—Get it Tomorrow by 10:30 a.m.!

# We'll Beat Any Price! Call for Your Best Price!

On any Mac computer. Call for details. AOL Keyword: MacMall Mention Your Priority Code: #ZMWD173





**NEW!**

**Mac OS X**

**\$119<sup>99</sup>!**

only

**ORDER NOW!** #956214

## Hot New Software!

**Mac OS 9.1**  
Make your Mac more powerful and Internet-friendly than ever before! Improves your audio, video and graphics performance and more!

- Sherlock 2 • iTools
- Voiceprint Password

only **\$88<sup>89</sup>** #956150

**NEW! Adobe Acrobat 5.0**  
The best way to share documents!

- Create documents anyone can open
- Repurpose PDF content
- Digitally sign documents

upgrade only **\$87<sup>99</sup>** #957596

## Visit Our Site!

✓ Featuring all the new products from Apple!



## And So Much More!

- ✓ Fastest overnight delivery!
- ✓ 100% Apple Gold Certified, best trained sales staff!
- ✓ \$2 billion in inventory—over 125,000 products!
- ✓ Custom configuration—we will build your CPU to your specifications!

## MacMall EZ Payment Plan!

**NEW! Payment terms up to 48 months!**

Now you can have low fixed monthly payments on consumer purchases of \$750 or more with the new MacMall EZ Payment Plan. It's fast and easy to apply for, and there are no application fees or prepayment fees. Call your Account Manager today, or apply online! You can complete your purchase in just minutes and have your order tomorrow!

Financing available on approved credit arranged through MBNA America Bank, N.A. Payment does not include shipping charges and sales taxes if applicable. Estimated monthly payment is based on approximate 48-month term at an Annual Percentage Rate (APR) of 14.99%. Your APR may be higher. There are no transaction fees for MacMall purchases billed directly to your account. There is a transaction fee of 3% of the U.S. Dollar amount of each advance check you write (\$5 min/\$30 max), but there is no obligation to use advance checks.

**Virtual PC with Windows 98**  
Run multiple operating systems concurrently on a single PC!

- Transfer files from shared Windows workstations
- Print to Windows PostScript printers
- Access file servers

only **\$189<sup>89</sup>** #955081

**Aladdin Stuffit Deluxe 6.0**  
Compresses and expands faster than any previous version. Your Stuffit files can be accessed by any Mac or PC, hassle-free!

only **\$24<sup>89</sup>** #953839  
After \$50 mfr. mail-in rebate. Price before rebate is \$74.89. Call for details.

**Quark XPress**  
The leading layout and design software for publishers worldwide!

- Layout, design, and graphics management
- Printing and production
- Text processing

only **\$764<sup>89</sup>** #55401

**TechTool Pro 3.0**  
No other program tests as many different aspects of your system as thoroughly as TechTool Pro!

- Detects virus problems and software conflicts
- New drive repair routines
- Improved recovery system
- Automatic update service

only **\$88<sup>99</sup>** #30489

**Dreamweaver 4 Fireworks 4 Studio**  
Create, edit and animate bitmap and vector Web graphics and add advanced interactivity and pop-up menus in Macromedia Fireworks' robust environment.

upgrade **\$184<sup>89</sup>** #953745

#953738 Dreamweaver 4 Fireworks 4 Studio Full \$398<sup>89</sup>

**Adobe Premiere 6.0**  
The essential tool for digital video editing!

Adobe Premiere 6.0 allows you to create video for the Web, DVD, CD-ROM and videotape!

upgrade only **\$139<sup>99</sup>** #955005

#955002 Adobe Premiere 6.0 Full \$548<sup>99</sup>

**Illustrator 9.0**  
The standard in vector graphics creation software just got better!

- Output to SVG, GIF, JPEG and PNG

upgrade for only **\$138<sup>99</sup>** #58042

#58038 Illustrator 9.0 Full Version \$388<sup>99</sup>

**Final Cut Pro**  
Meets the needs of video editors!

- Real-time editing architecture
- Support for virtually all professional video formats

Upgrade only **\$249** #958184

#958182 Final Cut Pro full version \$995

**Norton SystemWorks**  
Includes: Norton Utilities for Macintosh, Norton AntiVirus for Macintosh, Spring Cleaning from Aladdin and Retrospect Express Backup from Dantz!

as low as **\$69<sup>99</sup>** #852776  
After \$50 mfr. mail-in upgrade rebate. Price before rebate is \$119.99.

**Toast Titanium 5.0**  
CD-Recording software!

Lets you make your own music, data, and video CDs! Turn your digital photos into video slide shows and burn them or your iMovies onto VideoCDs that are playable on DVD players and your TV!

only **\$94<sup>99</sup>** #957574



# Great Deals on All Peripherals!

## Stylus® Color 8³ Printer

- 12ppm black; 9ppm color
- 2880 x 720dpi
- Parallel and USB interface

**EPSON**  
**New!**



only  
**\$199<sup>99</sup>** #955839

## Stylus® Color 777 Printer

- 2880 x 720dpi
- 8ppm black; 3ppm color
- AcuPhoto Halftoning

**EPSON**



only  
**\$99<sup>99</sup>** #952038

## HP DeskJet 1220Cse Printer

- Up to 13" x 19"
- 11ppm black; 9.5ppm color
- 2400 x 1200dpi resolution

**hp**  
invent

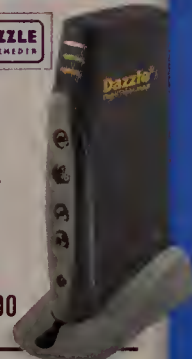


only  
**\$499** #56424

## Dazzle Hollywood 1394 DV

- Convert analog video to DV and vice versa
- Monitor video from a TV
- Convert video without a computer

**DAZZLE**  
MULTIMEDIA



only **\$259** #944700

## BELKIN 4 Port USB Hub

Provides you with instant expandability that's as simple as plugging in a USB connector!

only  
**\$35<sup>99</sup>** #54763

## WACOM Intuos 6" x 8" Special Edition Tablet



Includes pressure sensitive pen and eraser, cordless mouse & transparent overlay for tracing!

only **\$299** #950761

## Que! 12x10x32 FireWire CD-RW Drive

Features 2MB RAM buffer and one year warranty.



only **\$249** #951639  
Price reflects \$30 mfr. mail-in rebate.  
Price before rebate is \$279.

## Palm m500 Organizer

Includes mobile connectivity software!

- 8MB memory
- Dual expansion
- USB HotSync



only **\$399** #957983

## Olympus D-490 Digital Camera

- Includes 8MB SmartMedia
- 2.11 Megapixel
- 1280 x 960 res.
- 3X optical zoom
- QuickTime™ movie mode



only **\$449<sup>99</sup>** #951256

## Coolpix 880 Digital Camera

- 3.34 Megapixel CCD
- 3X Nikkor zoom
- 4X stepless digital zoom



only **\$649<sup>99</sup>** #952107

## Fantom 12x10x32 FireWire External CD-RW Drive

- FireWire interface



only **\$269<sup>99</sup>** #953493  
Price reflects \$30 mfr. mail-in rebate.  
Price before rebate is \$299.99.

## Perfection 1240U Scanner

- 1200 x 2400dpi
- 42-bit color
- USB connectivity
- Three-button interface



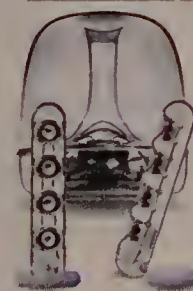
only **\$179<sup>99</sup>** #953564

## Nikon Super CoolScan 4000 Edition

Provides new 4,000dpi Optical Resolution with fast 38 second scan times.

only  
**\$1,695<sup>99</sup>** #956698

## harman kardon Soundsticks 3-Piece USB Speakers



- 40-Watt self-powered system
- 6-inch woofer

only **\$189<sup>99</sup>** #952775

## CVST External USB Floppy Drive with Color Panels

**FREE! Color Panels!**

Hot-swappable USB interface; no AC adapter required. Seven color panels included!



only **\$74<sup>94</sup>** #54835

## Radeon Mac 32MB PCI Video Card

- TV/VCR-output
- Supports Digital Flat Panel and VGA displays

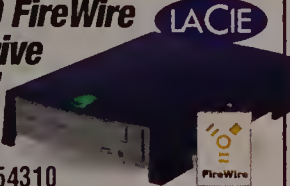


only **\$199** #956056

## 16x10x40 FireWire CD-RW Drive

Best Seller!

only  
**\$339** #954310



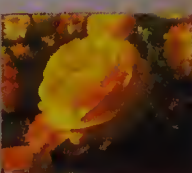
## LaCie Ext. 12x10x32 SCSI CD-RW Drive

- 2MB data buffer

now only  
**\$279** #954311

## CML151 15" LCD Display

- 1024 x 768 @ 75Hz resolution
- .297mm pixel pitch
- Bright 350:1 contrast ratio



Provides distortion free images while saving desk space!

only **\$549** #852122

## Kensington Turbo Mouse 5

- 4 programmable buttons
- Large trackball for superior control

The award winning mouse from Kensington!



only **\$94<sup>98</sup>** #77991

## ViewSonic 22" Display

- PerfectFlat 22" (20" viewable)
- Max. resolution of 1600 x 1200 refreshing @ 77Hz
- 0.25-0.27mm aperture grille pitch
- ARAG® screen treatment
- Flicker-free display



only **\$759** #852798

Promotional offers cannot be combined. Please check individual promotion details for ending date and other restrictions or call your Account Executive for more information. Prices, specifications and promotional offers are subject to change without notice. Limited to stock on hand. While we do our best to check errors, mistakes may occur—call to verify pricing.

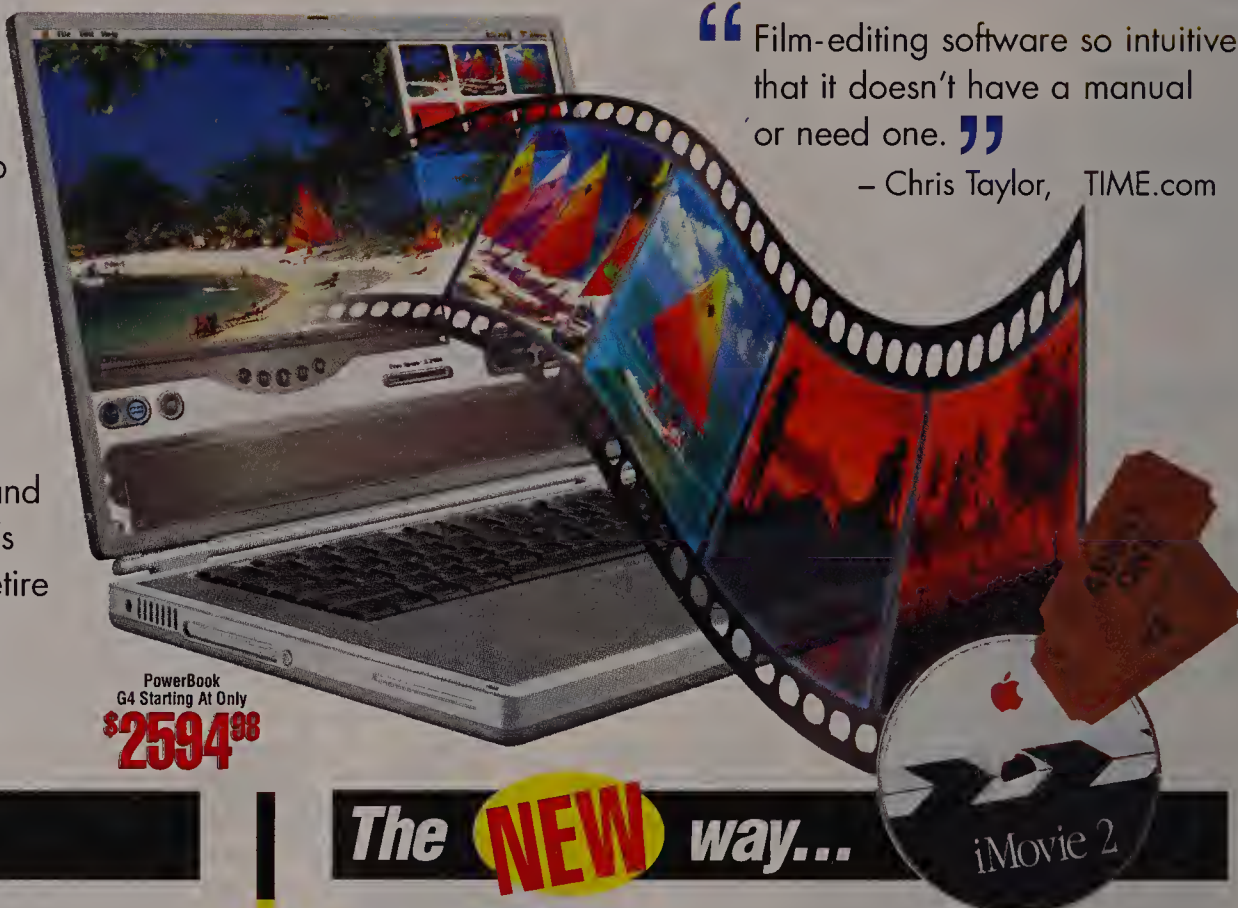
Order Any Time! Open 24 Hours! Order Today by 10 p.m. EST—Get it Tomorrow by 10:30 a.m.!

# We'll Beat Any Price! Call for Your Best Price!

On any Mac computer. Call for details. AOL Keyword: MacMall Mention Your Priority Code: #ZMWD173



Imagine making a slideshow or movie of your vacation that springs to life with music, special effects and narration. No more passing around a box full of photos or yawns as you blip through each and every 35mm slide using the old slide projector. Instead, gather friends and family together and watch your multimedia vacation event unfold on your TV. With iMovie 2 (now free with all Macs, including PowerBooks), your digital camcorder and the FireWire port on your new Mac, it's a lot easier than you might think. So retire the slide projector, and save the boxes for gifts and souvenirs. Order a new PowerBook with FREE iMovie 2 today!



PowerBook  
G4 Starting At Only  
**\$2594<sup>98</sup>**

iMovie 2  
“Film-editing software so intuitive that it doesn't have a manual or need one.”  
— Chris Taylor, TIME.com

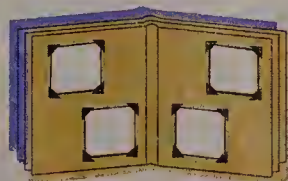
## The old way...



**Shoot** You'd wait for sales on film so you could stock up on extra film. Then using the good old standby, the 35mm camera, you'd dutifully fumble with loading the roll. And you had to be careful not to accidentally load a roll you already exposed – double exposures are definitely not double the fun.



**Develop & Wait** You'd look for coupons and wait for sales on film developing. Then you'd drop off your film at your local drugstore and wait, all the while hoping most of the pictures would turn out all right. No instant gratification here, even with a one-hour photo center.



**Store** You put your photos into an album, so people could sit next to you and wait patiently as you flip through it. You turned some into 35mm slides and put your friends to sleep with a barrage of static images. The rest went into shoe boxes or junk drawers. Not exactly the best way to store and share your memories.

iMovie 2 makes sharing your dream vacation with family and friends a reality that's almost as much fun as the vacation itself – or maybe even more fun. Capture and share your vacation differently this year, with iMovie and your Apple personal computer. We're Mac Zone, your superstore for all things Mac. Enjoy the summer with us.

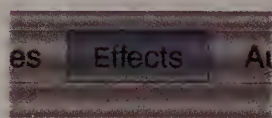
## The NEW way...



**Shoot** Discover how fun it is to make entertaining desktop movies out of vacation video you capture on your own digital camcorder. Just pop in a tape, shoot footage of your trip and get ready for a very different way of preserving those grand vacation memories.



**Edit** Select the clips of all the action or items of interest you caught on video – whether it's the fun of the beach, wake-jumping behind the ski boat or your parents meeting their grandchild for the first time. Edit out the rest, deleting all the nothing-in-particulars.



**Enhance** Split audio tracks between music and narration. Add sepia tones for a nostalgic effect. Introduce each scene with a snazzy title and transition. All with the Mac's famous drag-and-drop ease.



**Enjoy & Share** For the highest picture quality, record your video to tape for easy, onetime viewing. Or post it on your own home page with a free iTools account, for family around the world to see.



# Vacation Differently



Shoot like a pro with a digital camera or camcorder that fits your vacation lifestyle. At Mac Zone you can get digital camcorders that literally fit in your pocket. Most of the digital camcorders we carry have optical and digital zoom, so you can get closer to your subject without changing your position and losing the moment. Most feature either digital or optical picture stabilization to eliminate or reduce camera shake. Some digital camcorders can even shoot in low-light or no-light conditions. We have cameras that fit your budget, come Internet-ready with MP3, QuickTime and MPEG support, let you preview your pictures in direct sun and just about everything under the sun.

Be sure to call us or visit our website at [maczone.com](http://maczone.com) to find out more about our wide selection of digital cameras and camcorders, and start your vacation right.

**Macworld Reader Exclusive!**



**Kodak**

**Kodak MC3 Digital Camera**

*For the active lifestyle*

**\$199<sup>99</sup>**

#802386

*Small and pocketable, the MC3 was designed with the Internet in mind. Quickly and easily download your favorite music and transfer your videos and pictures to your PC.*

- Shoot digital video or stills
- Download and play MP3 tunes
- USB connection

**\$20 INSTANT SAVINGS!**

Available by phone only. No rebates or coupons. Offer good through 6/30/01.

**You must mention source code MW071.**

**Digital Still**



**Canon**

**PowerShot S300 Digital ELPH**

*World's smallest and lightest 3X zoom digital camera*

- 3X optical/7.5X digital zoom
- 2.11 megapixel
- USB connection
- Only 8.5 ounces

#136931 **\$599<sup>99</sup>**

**Digital Still**



**OLYMPUS**

**C3040 Digital Camera**

*Professional-quality still camera does 300 seconds of video, too*

- FREE accessory kit
- 3X optical/15X digital zoom
- 3.34 megapixel
- USB connection

#128581 **\$799<sup>99</sup>**

**Digital Video Camcorder**



**Canon**

**ZR30 Digital Camcorder**

*Up to three times the normal recording time of a standard DV cassette*

- 10X optical/30X digital zoom
- Photo/Movie/Progressive Scan modes
- 15 ounces

#128586 **\$899<sup>99</sup>** Call

**Digital Video Camcorder**



**Canon**

**Elura 2 Digital Camcorder**

*Mini-sized. Maxi-featured.*

- 10X optical/40X digital zoom
- Photo/Movie/Progressive Scan modes
- Crystal Clear Digital Stereo Sound
- 14 ounces

#124367 **\$1199<sup>99</sup>** Call

**Digital Video Camcorder**



**Canon**

**GL1 Digital Camcorder**

*FREE CineStream from Canon—\$500 Value!*

- 3-CCD image capture
- Professional L-series fluorite lens and pixel shift
- 36 ounces

#111853 **\$2499<sup>99</sup>** Call

Corporate bids welcome!  
Fax to 1-425-430-3420

A NASDAQ COMPANY Ticker Symbol: ZONS

Source Code  
**MW071**

Order by Phone  
**1.800.436.0606**

Order Online Today  
**www.maczone.com**

www.macworld.com July 2001 99



## Apple® Titanium PowerBook® G4

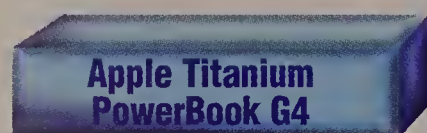
“ I can now create music whether I’m hanging out at home or touring in Europe.”

– Kurtis Mantronik, Artist, Remixer and Producer, as quoted on Apple’s website.



Mac OS X shown on display, sold separately. Mac OS 9.1 ships with PowerBook.

**Light in weight, not in features.**



Apple Titanium  
PowerBook G4

**Includes:**

- 5-hour battery
- Full set of ports including VGA
- DVD-ROM Drive
- DVD Power Supply

= **5.3**  
pounds  
**\$2594<sup>99</sup>**



Comparable  
PC Notebook

System with  
Standard Battery  
**3.5**  
pounds

Triple-  
Capacity  
Battery  
**4.4**  
pounds

Part  
Replicator  
(VGA)  
**4.8**  
pounds

DVD-  
ROM  
Drive  
**6.1**  
pounds

DVD  
Power  
Supply  
**6.5**  
pounds

= **6.5**  
pounds  
**\$3347**

Data based on Apple research.

**A mobile power-user's dream come true.**

Made of commercial-grade titanium, one of the lightest and most durable metals on the planet, the PowerBook G4 offers a full complement of powerful features – including such notebook firsts as a slot-loading DVD-ROM drive – and has room for a full gigabyte of RAM. Yet it weighs only 5.3 pounds and is only one inch thin.



PowerBook Protection Plan

**\$299<sup>96</sup>** #722604



**Upgrade Your PowerBook**

For PowerBook 400/500MHz

#116658	64MB	\$34.99
#116659	128MB	\$59.99
#135217	256MB	\$139.99*
#116023	512MB	\$499.99*

Memory available for other PowerBook models. Prices subject to change.  
\*Special price - limited to stock on hand.



G4 Starting At Only  
**\$2594<sup>98</sup>**

**Super-powered production.**

Whether your focus is on producing the news or creating music, the Titanium PowerBook G4's mobile super computing power frees you from traditional post-production environments.

"I've been waiting some time for the day when we could do non-linear, broadcast TV-quality editing on a simple laptop. So I was thrilled when I heard that we could do this with Final Cut Pro and a PowerBook." – Rick Lockridge, CNN Technology Correspondent, as quoted on Apple's website.



	G3/400MHz	Titanium G4/400MHz	Titanium G4/500MHz
Processor	G3/400MHz	Titanium G4/400MHz	Titanium G4/500MHz
Hard Drive	10GB	10GB	20GB
RAM	64MB	128MB	256MB
Optical Drive	DVD	DVD	DVD
TFT Screen	14.1"	15.2"	15.2"
Graphics Card	8MB ATI RAGE Mobility 128	8MB ATI RAGE Mobility 128	8MB ATI RAGE Mobility 128
	<b>\$1794<sup>98</sup></b> #124941	<b>\$2594<sup>98</sup></b> #130731	<b>\$3494<sup>98</sup></b> #130730



Credit cards are not charged until the order is shipped. Most products ship the same day (barring system failure, etc.). Shipping options include Ground, 2nd Day and Overnight delivery. Freight is based on average product weight. Handling extra. Insurance available. Special orders may require special shipping and handling charges. Call for international shipping rates. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand. Not responsible for typographical errors. All products sold by Zones, Inc. are third party products and are subject to the warranties & representations of the applicable manufacturers, including but not limited to Y2K compliance. Accordingly, Zones, Inc. makes no representation or warranty with respect to Y2K compliance of product sold. ©2001 Zones, Inc. All rights reserved. Unauthorized duplication is a violation of applicable laws. Apple, the Apple logo, Macintosh and PowerBook are registered trademarks of the Apple Computer, Inc.



# FREE Memory



Silver - #134133

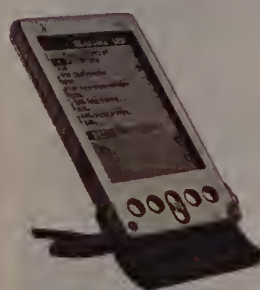


Blue - #134134

## Handspring Visor™ Edge

A perfect companion to the Titanium PowerBook G4, the Visor Edge easily fits in a pocket or a purse. Yet, this powerful, rechargeable Palm OS® organizer has an address book, date book and so much more. Plus, the detachable Springboard™ slot gives you infinite expansion possibilities.

# \$399<sup>99</sup>



Share data with your PowerBook  
**Handspring Edge Cradle**

#804653 **\$49<sup>99</sup>**

➤ .44" ⬅



Keep your Visor juiced up and ready to go  
**Handspring Edge Travel Charger**

#804656 **\$34<sup>99</sup>**



Displays over 65,000 vibrant colors  
**Handspring Visor™ Prism**

#130297 **\$449<sup>99</sup>**

## PowerBook Accessories



**PowerBook Must Have!**

High-performance portable data storage  
**VST Portable FireWire Bus-Powered CD-RW Drive**

#790705 **\$379<sup>99</sup>**



10GB Portable storage with USB and FireWire connectivity  
**LaCie FireWire Pocket Hard Drive**

#125962 **\$359<sup>99</sup>**



Smart, stylish and practical PowerBook case  
**Targus Leather Case**

#91934 **\$74<sup>99</sup>\***

\*Reflects 25% off with purchase of PowerBook



Converts your PowerBook G4 to a Desktop  
**Bookendz Docking Station**

#135783 **\$244<sup>99</sup>**



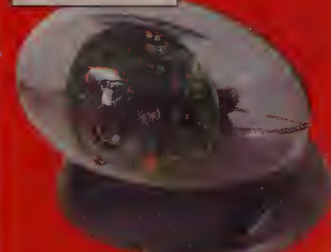
Safeguard your PowerBook  
**Kensington Notebook MicroSaver**

#118901 **\$39<sup>99</sup>**



**FREE** Two-button Scrolling Optical Mouse with purchase of  
**Macally Full Size Graphite Keyboard**

#117676 **\$59<sup>99</sup> \$90 Value!**



Digital Web images with FireWire speed  
**Pyro FireWire Web Cam**

#740852 **\$99<sup>99</sup>**



**FREE Mac Zone® Catalog**

• Latest Apple products  
• NEW technologies  
• Price drops and special offers  
Call for your FREE catalog today or sign up online.



**\$100 VALUE**

**YOUR CHOICE**

# FREE MEMORY!

up to 256MB

with select PowerBook purchase.

Call or visit [maczone.com](http://maczone.com) for the latest offers.

OR



**\$200 VALUE**

**Virtual PC \$49!\***

for only

**Virtual PC 4.0 with Windows Me**

- Imagine the power of being able to run nearly any software program on your NEW Macintosh!
- Amaze your PC friends with how easy Windows on your Mac is versus Windows on their PC!
- View websites that aren't Mac savvy!

\*Only \$49 with purchase of a Power Mac or PowerBook (G4 Cube not eligible). Must run Virtual PC in Mac OS 9; 128MB required to run VPC. While supplies last. Not valid with any other offer.



#791067 Apple PowerBook G4 Lithium-Ion Battery . \$139.99 #791068 Apple PowerBook G4 AC Adapter . . . . . \$74.99

Corporate bids welcome!  
Fax to 1-425-430-3420

A NASDAQ® COMPANY Ticker Symbol: ZONS

Source Code  
**MW071**

Order by Phone  
**1.800.436.0606**

Order Online Today  
**www.maczone.com**  
[www.macworld.com](http://www.macworld.com) July 2001 101





## Apple® Power Mac™ G4

- 38% faster than the previous G4
- CD-RW drive or revolutionary combination DVD-R/CD-RW SuperDrive on 733MHz model
- AGP 4X graphics slot – twice as fast as in the previous G4
- Expansion galore – four high-performance 64-bit PCI slots
- Up to 256K L2 and 1MB L3 cache

**Settling for less can cost a lot.** Settling for less can cost a lot. If you're still using a beige Power Mac G3 to render images in Photoshop, design 3D graphics or batch-process digital video, you're potentially losing a lot of time and money.

"I'm getting results [with the Power Mac G4] that point to an increase of two to 20 times the performance for Photoshop tasks.... Simply put, the more jobs you can do in a day, the more money you can make." – Chris Cox, hardware guru at Adobe, as quoted on Apple's website

**Open up new opportunities without keeping your budget up in the air.** "For the cost of outsourcing one video to an independent company, we've now got an office full of great gear that we can use to produce as many videos as we want. Essentially, I can do video for any department without anyone worrying about juggling their budget to make it happen."

– David Henry, A/V Administrator for the The Sacramento Bee, as quoted on Apple's website



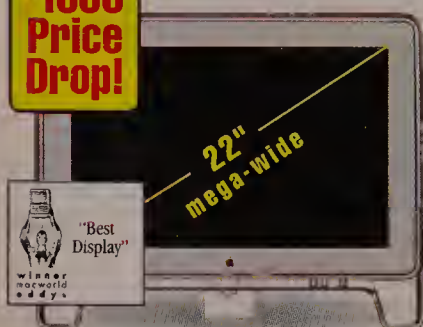
Professional DVD editing and creation  
**Apple DVD Studio Pro**  
**\$999<sup>99</sup>**  
#791074

Starting At Only

**\$1694<sup>98</sup>**



**\$1000 Price Drop!**



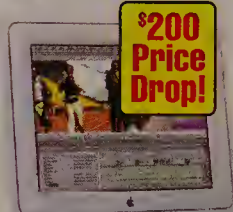
## Apple® Displays

Panoramic DVD viewing

### Apple Cinema Display

22" Diagonal TFT LCD

#124925 WAS **\$3999<sup>98</sup>** NOW **\$2999<sup>98</sup>**



**\$200 Price Drop!**

Truly desk-saving design

### Apple Studio 15 Display

15" Diagonal TFT LCD

#124924 **\$794<sup>98</sup>**

Attractive value, quality and style

### Apple Studio 17 Display

16" Viewable Natural Flat Diamondtron CRT

#124923 **\$494<sup>98</sup>**



**Best Seller!**

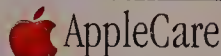


**Upgrade Your Power Mac!**

#### Power Mac G4 Memory

#674339	64MB	\$34.99
#123842	128MB	\$59.99
#715574	256MB	\$99.99

Prices subject to change.



Power Mac G4 Protection Plan **\$249<sup>96</sup>**  
#722601

	<b>G4</b>	<b>466</b>	<b>533</b>	<b>NEW G4 Dual</b>	<b>733</b>	<b>IN STOCK 733</b>
Processor	466MHz	533MHz	533MHz	533MHz	733MHz	733MHz
Hard Drive	30GB	40GB	40GB	40GB	60GB	60GB
RAM	128MB	128MB	128MB	128MB	256MB	256MB
Optical Drive	CD-RW	CD-RW	CD-RW	CD-RW	CD-RW	<b>SuperDrive</b>
Graphics Card	ATI RAGE Pro 128/16MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB	NVIDIA GeForce2 MX/32MB
FireWire/USB	2 Ports ea.	2 Ports ea.	2 Ports ea.	2 Ports ea.	2 Ports ea.	2 Ports ea.
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Cache	1MB L2	1MB L2	1MB L2	1MB L2	256k L2 1MB L3	256k L2 1MB L3

**\$1694<sup>98</sup>** #130736 **\$2194<sup>98</sup>** #130735 **\$2494<sup>98</sup>** #130798 **\$2994<sup>98</sup>** #130732 **\$3494<sup>98</sup>** #130733



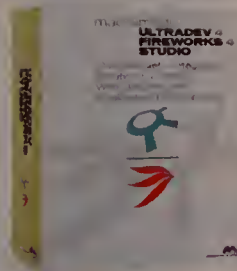
Credit cards are not charged until the order is shipped. Most products ship the same day (barring system failure, etc.). Shipping options include Ground, 2nd Day and Overnight delivery. Freight is based on average product weight. Handling extra. Insurance available. Special orders may require special shipping and handling charges. Call for international shipping rates. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand. Not responsible for typographical errors. All products sold by Zones, Inc. are third party products and are subject to the warranties & representations of the applicable manufacturers, including but not limited to Y2K compliance. Accordingly, Zones, Inc. makes no representation or warranty with respect to Y2K compliance of product sold. ©2001 Zones, Inc. All rights reserved. Unauthorized duplication is a violation of applicable laws. Apple, the Apple logo, Macintosh and PowerBook are registered trademarks of the Apple Computer, Inc.



# Super Computer



## Web Professional



Build ASP, JSP, CFML and html  
Web applications faster  
**Macromedia Ultra Dev 4  
Fireworks 4 Studio**  
#128340 **\$649<sup>99</sup>**



New Version!  
**Macromedia Director 8.5  
Shockwave Studio**  
#128350 **\$1149<sup>99</sup>**



Professional  
Web development  
**Macromedia  
Dreamweaver 4**  
#128332 **\$269<sup>98</sup>**

## Graphics Professional



Complete masking  
is now a snap  
**Corel KnockOut 1.5**  
#697199 **\$249<sup>99</sup>**



Ultimate natural media  
painting tool  
**Corel Painter 6**  
#710694 **\$379<sup>99</sup>**



Universal document exchange  
**Adobe Acrobat 5.0**  
#130262 **\$219<sup>97</sup>**

## Digital Video Professional



**FREE!** CineStream &  
BP390 battery  
from Canon with purchase!  
**A \$499<sup>99</sup> VALUE!**

3-CCD technology for brilliant colors  
**Canon XL1 3-CCD  
Digital Video Camcorder**  
#111851 **\$449<sup>99</sup>** **Call for price!**



Professional digital  
video editing  
**Adobe Premiere 6.0**  
#130219 **\$398<sup>98\*</sup>**

\*Save \$150 when you purchase Premiere 6.0  
with a DV camcorder on the same order. Low  
Zone price: \$549.97. Offer expires 12/31/01.



Easy video batch processing  
**Terran Cleaner 5**  
#740321 **\$579<sup>99</sup>**



Complete video production  
**Adobe Digital Video  
Collection Standard Ver.**  
#134035 **\$1199<sup>99</sup>**



## Apple® Final Cut Pro 2

Running on the blazingly fast Power Mac G4 or PowerBook G4, Final Cut Pro 2 offers the specialized features, performance and robust editing workflow that video professionals most need, without the expensive price tags and costly maintenance fees. It's up to 30X faster on single CPU systems and 70 percent faster on dual processor systems.

2.0 Upgrade Version

**\$249<sup>99</sup>**

#136101 Apple Final Cut Pro 2 –  
Full Version ..... \$999.99

#136102



**Makes editing videos  
a breeze**  
**Shuttle Pro  
Multimedia Controller**  
#128990 **\$99<sup>99</sup>**



**YOUR CHOICE  
FREE  
MEMORY!  
up to 256MB**

with select Power Mac purchase.  
Call or visit [maczone.com](http://maczone.com)  
for the latest offers.

OR



**Virtual PC 4.0 with Windows Me**

- Imagine the power of being able to run nearly any software program on your NEW Macintosh!
- Amaze your PC friends with how easy Windows on your Mac is versus Windows on their PC!
- View websites that aren't Mac savvy!

\*Only \$49 with purchase of a Power Mac or PowerBook (G4 Cube not eligible). Must run Virtual PC in Mac OS 9; 128MB required to run VPC. While supplies last. Not valid with any other offer.

Corporate bids welcome!  
Fax to 1-425-430-3420

Source Code  
**MW071**

Order by Phone  
**1.800.436.0606**

Order Online Today  
**[www.maczone.com](http://www.maczone.com)**

A NASDAQ® COMPANY Ticker Symbol: ZONS

[www.macworld.com](http://www.macworld.com) July 2001 103



Indigo

Flower Power

Blue Dalmatian

Graphite

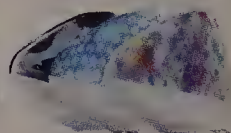
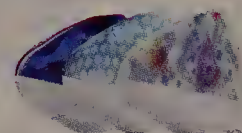
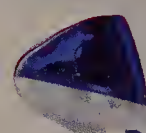
Starting at  
**\$1194<sup>98</sup>**

## Primed for incredible feats of creativity.

Whether you choose the sophisticated air of Graphite, the playful flair of the Blue Dalmatian, or the floral opalescence of Flower Power, all have the same, top-of-the-line features. All sport an all-new 8x4x32x max. variable CD-RW drive, the most powerful PowerPC G3 processor ever, 128MB of RAM, a 40GB hard drive, and a 16MB ATI RAGE 128 Ultra graphics card for screaming 3D.

up to  
**600MHz**

Apple<sup>®</sup>  
iMac<sup>™</sup>



iMac 400

iMac 500

iMac 600

	400MHz	500MHz	600MHz
Processor	400MHz	500MHz	600MHz
Hard Drive	10GB	20GB	40GB
RAM	64MB	64MB	128MB
Optical Drive	CD-ROM	CD-RW	CD-RW
FireWire and USB	2 Ports each	2 Ports each	2 Ports each
iMovie 2	Yes	Yes	Yes

**AppleCare**  
iMac Protection Plan  
**\$149<sup>96</sup>** #722602

**\$894<sup>98</sup>**  
Indigo #130786

**\$1194<sup>98</sup>**  
Indigo #130787  
Blue Dalmatian #130788  
Flower Power #130789

**\$1494<sup>98</sup>**  
Graphite #130790  
Blue Dalmatian #130791  
Flower Power #130792

Indigo

Mac OS X  
shown on display.  
Product ships  
with Mac OS 9.1.

Starting at  
**\$1494<sup>98</sup>**

Key Lime

**AppleCare**  
iBook Protection Plan  
**\$229<sup>96</sup>** #722603

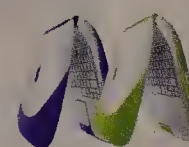
## Impressive presentations

Catching your eye with exciting color, the iBook empowers your creativity with up to a 466MHz G3 processor, a spacious 10GB hard disk drive, easy FireWire connectivity, and crowd-pleasing presentation capabilities right at your fingertips.

The iBook comes pre-loaded with AppleWorks 6 to help you create gorgeous slide shows. It gives you easy ways to add tables, charts, graphics, digital photography, clip art images and sound for greater impact. Import your iMovie clips right into your presentation. You can even set your presentation to Loop or Auto Advance so it runs by itself. Empower your creativity. Order today!



Apple<sup>®</sup>  
iBook<sup>™</sup>



iBook

iBook SE

	366MHz	466MHz
Processor	366MHz	466MHz
Hard Drive	10GB	10GB
RAM	64MB	64MB
On-chip Cache	256K	256K
Optical Drive	CD	DVD
FireWire	1 Port	1 Port

Both models come AirPort ready, have 10/100BT Ethernet and 56K modem.

**Macworld**  
1 1/2  
December 2000

**\$1494<sup>98</sup>**  
Indigo #124939  
Key Lime #124977

**\$1794<sup>98</sup>**  
Graphite #124940  
Key Lime #124978

Business Leasing Available: Call 1-800-436-0606 for details.

**Value RAM**  
BY KINGSTON

**Upgrade Your iMac or iBook!**

For iMac 350/400MHz

#674339	64MB	\$34.99
#123842	128MB	\$59.99
#715574	256MB	\$99.99

For iBook

#674337	32MB	\$44.99*
#715586	64MB	\$19.99*

\*Special buy—while supplies last.

Credit cards are not charged until the order is shipped. Most products ship the same day (barring system failure, etc.). Shipping options include Ground, 2nd Day and Overnight delivery. Freight is based on average product weight. Handling extra. Insurance available. Special orders may require special shipping and handling charges. Call for international shipping rates. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand. Not responsible for typographical errors. All products sold by Zones, Inc. are third party products and are subject to the warranties & representations of the applicable manufacturers, including but not limited to Y2K compliance. Accordingly, Zones, Inc. makes no representation or warranty with respect to Y2K compliance of product sold. ©2001 Zones, Inc. All rights reserved. Unauthorized duplication is a violation of applicable laws. Apple, the Apple logo, Macintosh and PowerBook are registered trademarks of the Apple Computer, Inc.



# as low as 99¢



**Mac Zone<sup>®</sup> By Phone!**  
 Friendly people.  
 Apple certified advice.  
 Our people make  
 the difference!  
 1-800-436-0606

## Apple<sup>®</sup> and Epson<sup>®</sup> Team Up

### Epson Printer As Low As 99¢

Purchase any iMac and one of these qualifying Epson printers and receive a \$69 manufacturer's mail-in rebate. iMac and printer must be purchased together. Limit one per customer. Offer good through 7/8/01. Can be used in conjunction with FREE memory offer.

#### Epson Stylus 580

Low Zone Price \$69<sup>99</sup>  
 Mfr. Rebate - \$69<sup>00</sup>  
**You Pay Only 99¢**  
 #737659



#### Epson Stylus 777i

Low Zone Price \$99<sup>99</sup>  
 Mfr. Rebate - \$69<sup>00</sup>  
**You Pay Only \$39<sup>99</sup>**  
 #124636

#### Epson Stylus 880i

Low Zone Price \$149<sup>99</sup>  
 Mfr. Rebate - \$69<sup>00</sup>  
**You Pay Only \$80<sup>99</sup>**  
 #124653

#### Epson Stylus 888

Low Zone Price \$199<sup>99</sup>  
 Mfr. Rebate - \$69<sup>00</sup>  
 Additional Epson Rebate - \$30<sup>00</sup>\*  
**You Pay Only \$100<sup>99</sup>**  
 \*Offer good through 6/30/01 #760905



**FREE MEMORY!**  
 up to 128MB

with select iMac or iBook purchase.  
 Call or visit [maczone.com](http://maczone.com) for the latest offers.

### EXCLUSIVE! Epson Stylus 777 with Print Explosion

**\$160 Value!** ONLY **\$89<sup>99</sup>\***  
 #136103



**Print Explosion**  
 Over 4000  
 professional  
 designs!

**Epson Stylus 777**  
 fast, space-saving with  
 built-in USB connectivity

\*After \$20 Mac Zone rebate. Low Zone price: \$109.99. Limited one per customer. Offer good through 6/30/01. While supplies last.

**FREE**  
 Download iTunes  
 from Apple.com

## iTunes Digital music the Macintosh way.

### MP3 to Go!

iTunes compatible

#### RIO 600 MP3 Player

32MB of built-in  
 memory gives you  
 an hour of your  
 favorite music. USB  
 connection works  
 with PC or Mac.

**\$139<sup>99</sup>**  
 #701451



### Rip. Mix. Burn. for PowerBook

#### CD burning to go!

Includes VST Portable FireWire  
 CD-RW Drive for PowerBook;  
 Neato CD/DVD Labeler Kit;  
 40 Matte Neato  
 CD/DVD Labels; and a  
 50-pack spindle of Fuji  
 16X CD-R, 80-minute media; and  
 a 25-pack of Slimline  
 Jewel Cases.

**\$460 Value! All for only**  
**\$429<sup>99</sup>** #135226



### Rip. Mix. Burn. for beginners

Includes a QPS 4x4x8x USB  
 CD-RW drive; Neato CD/DVD  
 Labeler Kit; 40 Matte Neato  
 CD/DVD Labels; and a  
 50-pack spindle of Fuji  
 16X CD-R, 80-min. media.

**\$290 Value! All for only**  
**\$259<sup>99</sup>** #135224

Kit with a faster FireWire CD-RW  
 drive (12x10x32x) for only  
 \$70 more. #135225 \$349.99



Expand your  
 iTunes capability!

## Popular Macintosh Accessories



3-piece speaker system  
**Harman Kardon SoundSticks\***  
 #127797 **\$199<sup>99</sup>**  
 \*Requires  
 Mac OS 9.0.4



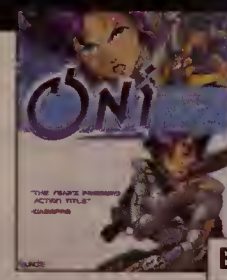
Get behind the wheel  
**R100 USB Sports Wheel**  
 #753935 **\$49<sup>99</sup>**



Edit your videos with confidence  
**Contour Design Shuttle Pro  
 Multimedia Controller**  
 #128990 **\$99<sup>99</sup>**



Use floppies with your iMac  
**VST USB Floppy Drive**  
 #112789 **\$79<sup>99</sup>**



Intense, full  
 3D sci-fi action  
**Oni by Bungie**  
 #134004 **\$39<sup>99</sup>**

Corporate bids welcome!  
 Fax to 1-425-430-3420

A NASDAQ<sup>®</sup> COMPANY Ticker Symbol: ZONS

Source Code  
**MW071**

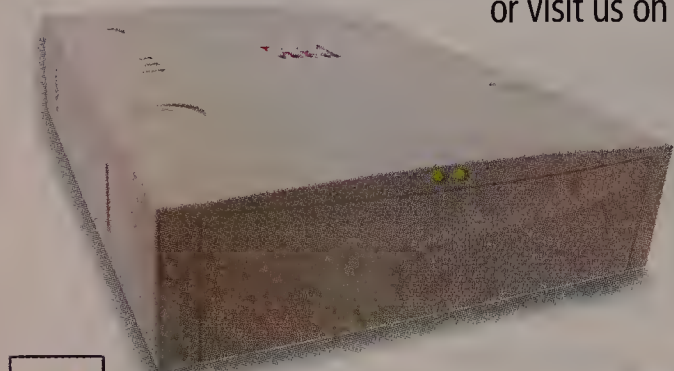
Order by Phone  
**1.800.436.0606**

Order Online Today  
**[www.maczone.com](http://www.maczone.com)**



## The latest technology for your newest idea.

APS Tech continues to be committed to delivering unique, inventive storage solutions specifically developed to enhance your creativity and boost your productivity. Products like the APS DVD-R/RW+CD-R/RW, which lets you archive your digital content on CD and DVD media, or the APS 40GB USB Hard Drive offering 40GB of spacious capacity. With the APS CD-RW 24x10x40 FireWire Plus, you'll burn a full CD in just three minutes. These products and others from APS Tech will bring your ideas to life faster, easier and more brilliantly. Look for these products in this ad, or visit us on the Web at [www.apstech.com](http://www.apstech.com)



**\$329.95**

### APS 60GB FireWire plus Hard Drive

- FireWire and USB interfaces
- Hot-swappable
- No device IDs, terminators
- Ideal for DV storage
- Share among Macs and PCs

#### APS FireWire plus Hard Drives

Model	Price
AP5 20GB 7200 RPM FireWire Plus Hard Drive	\$229.95
AP5 40GB 7200 RPM FireWire Plus Hard Drive	289.95
AP5 60GB 7200 RPM FireWire Plus Hard Drive	329.95
AP5 75GB 7200 RPM FireWire Plus Hard Drive	569.95



**\$219.95**

### APS 40GB USB Hard Drive

- 7200 rpm hard drive
- Hot-swappable
- Convenient USB interface
- Affordable storage

#### APS USB Hard Drives

Model	RPM	APS Pro2
AP5 20GB USB Hard Drive	7200	\$179.95
AP5 40GB USB Hard Drive	7200	219.95



Drives on these pages are covered by the APS 30-Day Money-Back Guarantee.



**\$399.95**

### LaCie 8x4x24x PocketCD-RW

- Powerful, pocket-sized CD-RW
- U&I technology — FireWire and USB ports
- Mac and PC compatible

#### LaCie PocketDrives

Model	Price
LaCie 8x4x24 PocketCD-RW	\$399.95
LaCie 10GB PocketDrive	299.95*
LaCie 20GB PocketDrive	399.95*
LaCie 30GB PocketDrive	669.95*

\* price after \$30 mail-in rebate.

#### APS Ultra160 LVD SCSI Drives

Model	RPM	*Internal	External
AP5 5T 18GB Ultra160 LVD	7200†	\$279.95	\$349.95
AP5 5T 36GB Ultra160 LVD	7200†	449.95	519.95
AP5 5T 18GB Ultra160 LVD	10,000	309.95	379.95
AP5 5T 36GB Ultra160 LVD	10,000	569.95	639.95
AP5 5T 73GB Ultra160 LVD	10,000	999.95	1,069.95
AP5 5T 180GB Ultra160 LVD	7200	—	2,299.95

Drives listed above carry a five-year warranty, except those marked.

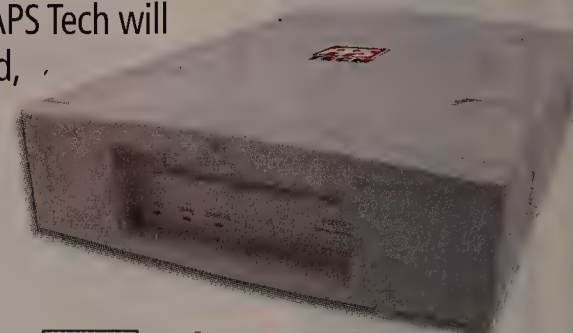
† Marked drives carry a three-year warranty.

#### APS Ultra SCSI Drives

Model	RPM	*Internal	APS Pro2
AP5 5T 18GB Ultra 5C5I	7200	\$279.95	\$349.95

Drives listed above carry a five-year warranty.

\* Internal configuration does not include a mounting bracket. Intended as a replacement internal SCSI drive.



**\$849.95**

with Retrospect software for Mac and PC

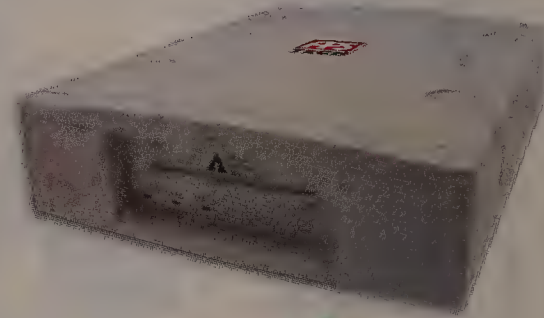
### APS HyperDAT® III FireWire

- Reliable DDS-3 technology
- 12GB native backup
- Ideal for entry-level networks
- Fast FireWire interface for high-end workstations
- Ships with Retrospect for Mac and PC

#### APS HyperDAT Tape Backup

Model	Price
AP5 HyperDAT® III (DD5-3) 5C5I	\$749.95
AP5 HyperDAT® III (DD5-3) FireWire	849.95
AP5 HyperDAT® IV (DD5-4) LVD	1,049.95

Ships with Retrospect software for Mac and PC



**\$1,649.95**

with Retrospect software for Mac and PC

### APS AIT+ FireWire

- 35GB native backup
- Native SCSI adapted for FireWire
- Perfect for 3-D graphics workstations
- 4MB sustained data transfer rate
- Ships with Retrospect for Mac and PC

#### APS AIT Tape Backup

Model	Price
AP5 AIT+ 5C5I	\$1,549.95
AP5 AIT+ FireWire	1,649.95
AP5 AIT II LVD	3,299.95

Ships with Retrospect software for Mac and PC

Visit our website for a complete listing of products:  
[www.apstech.com](http://www.apstech.com)



# with your creativity in mind.



**\$989.95**

## APS DVD-R/RW+CD-RW FireWire *plus*

- Affordable DVD-RW/CD-RW writer in one drive
- FireWire and USB interfaces
- Records and reads DVD-R/RW and CD-R/RW discs
- Produce digital content on DVD and CD media
- Easy connectivity to G4 workstations and cubes, PowerBooks and iMacDV systems



**\$389.95**

## APS CD-RW 24x10x40 FireWire *plus*

- FireWire and USB interfaces
- Hot-swappable
- Blazing 24X record speed
- Burn full CD in just three minutes
- Mac and PC compatible

### APS CD-RW SCSI Drives

Model	Price
APS CD-RW 8x4x32 FireWire Plus	\$239.95
APS CD-RW 16x10x40 FireWire Plus	299.95*
APS CD-RW 24x10x40 FireWire Plus	389.95

\* price after \$30 mail-in rebate.

### APS CD-RW SCSI Drives

Model	Price
APS CD-RW 16x10x40 SCSI	\$319.95

### APS CD-RW USB Drives

Model	Price
APS CD-RW 4x4x32 USB	\$199.95



**\$499.95**

## APS 4.7GB DVD-RAM FireWire

- Rewritable DVD discs for archiving DV
- Store up 9.4GB per disc
- Reads other CD, DVD formats
- Random access quickly restores files
- FireWire interface for large graphics files

### APS DVD-RAM Drives

Model	Price
APS 4.7GB DVD-RAM FireWire	\$499.95
APS 4.7GB DVD-RAM SCSI	499.95



**\$6,199.95**

## APS 5-Bay Hardware RAID System

- Fast access, mammoth capacity
- Hot-swappable drives, fans, power supplies
- RAID levels 0, 1, 0+1, 4 and 5

### APS RAID Systems

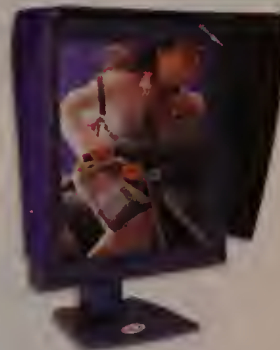
Model	Price
APS Hardware RAID 5/18GB LVD 10K	\$6,199.95



LaCie photon18blue  
landscape mode

**\$2,299.95**

LaCie photon18blue  
portrait mode



## LaCie photon18blue

- Pivoting 18" flat-panel LCD
- Portrait and landscape modes
- 160 degree horizontal and vertical viewing
- Small footprint saves desk space
- Multiple ports for greatest compatibility
- Height, swivel and tilt adjustable

### Desktop & Accessories

Model	Price
LaCie electron19blue II	\$589.95
LaCie electron22blue II	1,049.95
LaCie photon18blue LCD	2,299.95
LaCie blue eye	499.95

Mac OS, FireWire and the FireWire logo are registered trademarks of Apple Computer, Inc. APS Tech is a registered trademark. Other brand or product names are registered trademarks or trademarks of their respective holders.

- 30-day money-back satisfaction on all APS Tech brand drives and accessories. Your risk is the cost of shipping. Monitors and 3rd party products carry warranties from their respective manufacturers.
- APS Tech's warranty is a pass-through of the mechanism manufacturer's warranty which will be serviced by APS Tech. APS Tech warrants APS Tech branded enclosures, brackets and power supplies, and will, at its discretion, replace or repair products found to be defective according to the specific terms of the warranty accompanying the product.
- Refused orders subject to 20% restocking fee.
- International customers must pay for all shipping charges.
- Prices and specifications are subject to change without notice.
- Not responsible for typographical errors.
- Your APS Tech Drive unit may contain one or more components that were in prior use, but which have been inspected and repaired or rebuilt as necessary. These components, if any are covered by the same warranty provisions, exclusions and limitations to the same extent, and on the same terms as otherwise "new" components.
- © 2001, APS Tech. All Rights Reserved.

Source Code: MW0701

**Call 800 - 374 - 5681**

Corporate Sales (800) 395 - 5871 • International (503) 844 - 4600

6am - 9pm, Monday - Friday, 9am - 4pm Saturday - Sunday, Pacific Time



Circle 56 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



Advanced tools for digital visionaries™

[www.macworld.com](http://www.macworld.com) July 2001 107



# Creative technology from CDW



## Apple® Power Mac™ G4 466MHz minitower

- ▶ 466MHz PowerPC™ G4 processor
- ▶ RAM: 128MB std., 1.5GB max.
- ▶ 30GB Ultra ATA hard drive
- ▶ CD-RW drive
- ▶ 56Kbps modem
- ▶ 10/100/1000BASE-T Ethernet
- ▶ Mac® OS 9.1

**\$1695.00** CDW 267761

## Apple Power Mac G4 533MHz minitower

- ▶ 533MHz PowerPC™ G4 processor
- ▶ RAM: 128MB std., 1.5GB max.
- ▶ 40GB Ultra ATA hard drive
- ▶ CD-RW drive
- ▶ 56Kbps modem
- ▶ 10/100/1000BASE-T Ethernet
- ▶ Mac OS 9.1

**\$2195.00** CDW 267762

## Apple Power Mac G4 733MHz minitower

- ▶ 733MHz PowerPC™ G4 processor
- ▶ RAM: 256MB std., 1.5GB max.
- ▶ 60GB Ultra ATA hard drive
- ▶ Combination DVD-ROM and CD-RW drive
- ▶ 56Kbps modem
- ▶ 10/100/1000BASE-T Ethernet
- ▶ Mac OS 9.1

**\$3495.00** CDW 267769



## NEC/Mitsubishi Diamond Pro 2060u

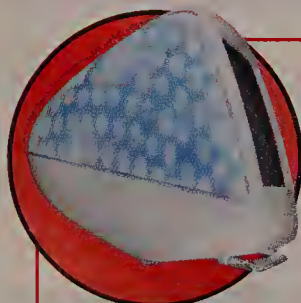
With its superior screen display and dynamic cabinet design, NEC/Mitsubishi Diamond Pro 2060u brings you to the forefront of flat screen technology packed into this 22" CRT with 20" viewable image size.

**\$939.01** CDW 266444

## JVC GR-DV2000U High-band digital CyberCam™

- ▶ 680,000 pixel progressive scan CCD provides true 520-line video resolution
- ▶ 1.92 megapixel UXGA (1600 x 1200) still images without interpolation
- ▶ 300X digital zoom with Electronic Image Stabilization (EIS)
- ▶ FireWire® and USB connectivity

**\$1999.95** CDW 275851



## Apple iMac™

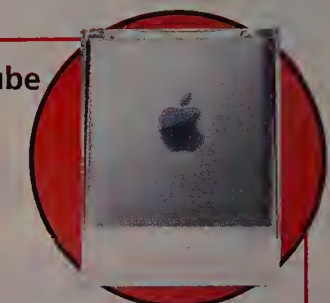
- ▶ 500MHz PowerPC™ G3 processor
- ▶ RAM: 64MB std., 1GB max.
- ▶ 20GB hard drive
- ▶ CD-RW drive
- ▶ 56Kbps modem
- ▶ 10/100BASE-T Ethernet port
- ▶ AirPort™ ready

**\$1195.00** CDW 278448

## Apple Power Macintosh™ G4 Cube

- ▶ 450MHz PowerPC™ G4 processor
- ▶ RAM: 64MB std., 1.5GB max.
- ▶ 20GB hard drive
- ▶ 4X Max DVD-ROM drive with DVD-video playback
- ▶ 56Kbps modem
- ▶ 10/100BASE-T Ethernet connection
- ▶ AirPort ready with built-in antennas

**\$1295.00** CDW 235622



Less than 8" high

CDW carries the full line of Mac® and Mac compatible products. Call your CDW account manager or visit us at [www.cdw.com](http://www.cdw.com) for more information.



Authorized Reseller



Computing Solutions  
Built for Business®



[www.cdw.com](http://www.cdw.com)



800-509-4239

All pricing subject to change. For all prices and products, CDW® reserves the right to make adjustments due to changing market conditions, product discontinuation, manufacturer price changes or typographical errors in advertisements. All products sold by CDW are third party products and are subject to the warranties and representations of the applicable manufacturers. Please refer to [www.cdw.com](http://www.cdw.com) for additional terms and conditions.

©2001 CDW® Computer Centers, Inc. 200 N. Milwaukee Avenue, Vernon Hills, IL 60061 MW7414A/B 6/01



## "I opened a virus by accident."

Translation: I opened a virus like you told me not to.

### Apple iBook™

- ▶ 366MHz PowerPC™ G3 processor ▶ RAM: 64MB std., 320MB max.
- ▶ 10GB hard drive ▶ 24X Max CD-ROM drive ▶ Mac OS 9
- ▶ 12.1" active-matrix display ▶ Includes: Apple iMovie™ 2 Software

Indigo **\$1495.00** CDW 245225



### Apple iBook Special Edition

- ▶ 466MHz PowerPC™ G3 processor ▶ RAM: 64MB std., 320MB max.
- ▶ 10GB hard drive ▶ 6X Max DVD-ROM drive ▶ Mac OS 9
- ▶ 12.1" active-matrix display ▶ Includes: Apple iMovie 2 Software

Graphite **\$1795.00** CDW 245226

### Apple PowerBook®

- ▶ 400MHz PowerPC G4 processor ▶ RAM: 128MB std., 1GB max.
- ▶ 10GB hard drive ▶ 6X Max DVD-ROM drive ▶ Mac OS 9.1 ▶ 15.2" active-matrix widescreen display ▶ Includes: Apple iMovie 2 Software

**\$2595.00** CDW 26777



### Apple PowerBook

- ▶ 500MHz PowerPC™ G4 processor ▶ RAM: 256MB std., 1GB max.
- ▶ 20GB hard drive ▶ 6X Max DVD-ROM drive ▶ Mac OS 9.1 ▶ 15.2" active-matrix widescreen display ▶ Includes: Apple iMovie 2 Software

**\$3495.00** CDW 267778



Authorized Reseller

NEC/MITSUBISHI  
NEC-MITSUBISHI ELECTRONICS DISPLAY

SEE MORE.

JVC

Apple, the Apple logo, Mac, Mac OS, Power Macintosh and PowerBook are registered trademarks of Apple Computer, Inc. AirPort, iBook, iMac, iMovie and Power Mac are trademarks of Apple Computer, Inc. PowerPC™ and the PowerPC logo™ are trademarks of International Business Machines Corporation, used under license therefrom.

## How to get solutions that protect your company from problems and your co-workers from themselves.

At CDW, we understand what it's like to be a busy IT professional. And while we can't eliminate your problems, we do have powerful solutions and a dedicated support team that will try to make your day easier. At least a little.

**Leading Software:** Whether you need software guaranteed to save you time or money, CDW offers some of the best software for business every day.



**Technical Support:** Our friendly tech support team is available 24/7 to help you solve your problems. We'll be there for you when you need it. Give us a call day or night.



**Personal Account Manager:** CDW assigns an account manager and a team of product experts to your business so you never get lost under the IT road.



[www.cdw.com](http://www.cdw.com)



800-509-4239

**CDW**

Computing Solutions  
Built for Business®



**LACIE**  
**LaCie PocketDrive™**  
**CD-RW 3424**  
 External 8x4x24 USB/FireWire® Mobile CD-RW Drive  
 •Max.: 8x-write/4x-rewrite/24x-read  
 •2MB buffer  
 •Software, blank CD-R & CD-RW  
 •USB/FireWire connectors •For Windows/Mac  
**\$399.99** (LAC 300383)  
**300103 External FireWire™ CD-RW Drive**  
 •Max.: 8x-write/4x-rewrite/32x-read •Includes TOAST™ software (LAC 300103) ..... **\$229.99**  
**300122 External FireWire™ DVD-RAM Drive**  
 •Max. storage: 9.4GB double-sided (4.7GB single-sided) •Windows®/Mac® (LAC 300122) ..... **\$499.99**  
**300107 External 75GB FireWire™ Hard Drive**  
 •Max. transfer rate: 400 Mbits/sec •8 Sns average seek time •7200 rpm •2MB buffer •PC/Mac (LAC 300107) ..... **\$549.99**

**MP3 Players** **ALL For MAC/PC!**  
**Riovolt™**  
 Digital Audio CD Player  
 •Plays audio CDs + MP3/WMA files  
 •recorded to CD-Rs (20+ hr. play) •120-sec. electronic shock protection •Up to 15 hr. battery life with 2 AAs (included)  
**\$169.99** (DIA 90260193)  
**Riovolt**  
**Rio 600 Digital Audio Player**  
 •32MB memory, upgrade to 372MB •Supports MP3/WMA formats •Skip-free •USB port •Headphones (DIA 90260027) ..... **\$149.99**  
**Nike psx [play 60 Portable Sport Audio Player**  
 •Skip-free audio •32MB built-in memory for up to 60 min. of listening •Upgradeable with MMC cards •Supports MP3/WMA digital formats •USB (DIA 90260094) ..... **\$169.99**  
**Rio 800 Digital Audio Player**  
 •Capture/mix/play digital music from Internet or CDs •64MB memory for 2-hr. music/32-hr. talk •Supports MP3/WMA •USB •Remote & headphones (DIA 90260092) ..... **\$249.99**

**Macintosh® Software**  
**Apple®**  
**Final Cut Pro® 2**  
 •The next generation, award-winning professional choice video editing, compositing & special effects software with real-time editing •PMac® CD  
**\$999.99** (APP FCP2-C)  
**Mac® OS X**  
 by Apple (APP OSX-C) ..... **\$119.99**  
**SystemWorks** by Symantec  
 •SSD Mail-In Version/Competitive Upgrade Rebate thru 12/31/01 (SMM SYSWORKS-C) ..... **\$129.99**  
**Toast® 5 Titanium**  
 by Roxio™ (RXM TOASTS-C) ..... **\$89.99**  
**Acrobat® (5.0)**  
 by Adobe® (ADM ACROBATS-C) ..... **\$239.99**  
**Office 2001 For Macintosh®**  
 by Microsoft® (MSM OFFICE2K1-C) ..... **\$429.99**

**Mac® Entertainment**  
**UBI Soft**  
**Myst™ III- Exile**  
 •The Sequel to Myst® & River®, plunges you into an adventure of tragedy & vengeance that you will never forget •Hauntingly beautiful graphics •Win/Mac CD  
**\$39.99** (UBI MYST-C)  
**WEBMASTER**  
 by Tivola (TIV WEBMASTER-C) ..... **\$16.99**  
**Oni**  
 by Gathering of Developers (GAM ONI-C) ..... **\$36.99**  
**Escape From Monkey Island™**  
 by Aspyr™ Media (AYA ESCAPE-C) ..... **\$39.99**  
**Finale® Print Music!**  
 by Coda Music (COO PRINT21-C) ..... **\$49.99**

# J&R COMPUTER WORLD

**WALK IN** **PHONE IN** **LOG IN**  
 Park Row NYC 800-221-8180 ANYTIME www.jandr.com AOL Keyword: J&R

## NEW Apple® PowerBook® GT/Titanium Computers!

**IN STOCK!**  
**Apple® PowerBook® G4/400**  
**128/10GB/DVD-ROM/10/100BASE-T**  
 •400MHz PowerPC™ processor w/Velocity Engine •15.2" TFT display  
 •128MB SDRAM •10GB HD •DVD-ROM •8MB VRAM •56K max. modem •10/100BASE-T •iMovie™ 2/iTunes •Mac® OS9.1 •Titanium  
**\$2599.99** (APP M7952LL/A)  
**Apple® PowerBook® G4/500**  
**256/20GB/DVD-ROM/10/100BASE-T**  
 •500MHz PowerPC™ processor w/Velocity Engine  
 •15.2" TFT display •256MB SDRAM •20GB HD •DVD-ROM  
 •8MB VRAM •56K max. modem •10/100BASE-T  
 •iMovie™ 2/iTunes •Mac® OS9.1 •Titanium  
**\$3499.99** (APP M7710LL/A)

## NEW Apple® G3 iMac™ Computers!

**Apple® G3 iMac™ DV/400**  
**64/10GB/CD/Ethernet**  
**All-In-One Computer**  
 •400MHz PowerPC™ G3 processor •64MB SDRAM •10GB HD  
 •24x-max. CD-ROM •Digital Video •8MB VRAM •10/100BASE-T  
 •V.90 modem •iMovie™ 2 •15" color display •Mac® OS 9.1 •Indigo  
**\$899.99** (APP M7683LL/A)  
**Apple® G3 iMac™ DV/500**  
**64/20GB/CD-RW/Ethernet**  
**All-In-One Computer**  
 •500MHz PowerPC™ G3 processor  
 •64MB SDRAM •20GB HD  
 •CD-RW •Digital Video  
 •16MB VRAM •10/100BASE-T  
 •V.90 modem •iMovie™ 2  
 •15" color display •Mac® OS 9.1  
**\$1199.99** (APP M7669LL/A)  
 (APP M8347LL/A)  
 (APP M8348LL/A)

**Apple® G3 iMac™ DV Special Edition /600**  
**128/40GB/CD-RW/Ethernet**  
**All-In-One Computer**  
 •600MHz PowerPC™ G3 processor  
 •128MB SDRAM •40GB HD •CD-RW  
 •Digital Video •16MB SDRAM  
 •10/100BASE-T •V.90 modem •iMovie™ 2  
 •15" color display •Mac® OS 9.1  
**\$1499.99**  
 (APP M7675LL/A)  
 (APP M7679LL/A)  
 (APP M7680LL/A)  
 BLUE DALMATION  
 FLOWER POWER  
 GRAPHITE  
 ©2001 Apple Computer, Inc. All rights reserved. Apple, Apple logo, Macintosh, Power Macintosh & iMac are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective owners. All Apple products designed to be accessible to individuals with disabilities. Prices & promotions may not be combined with any other prices & promotions. Offers good while supplies last. PowerPC & the PowerPC logo are trademarks of International Business Machines Corporation used under license therefrom.

Order from **www.jandr.com** AOL Keyword: **J&R**

**J&R CORPORATE SALES BUSINESS LEASING:**  
**No Money Down, No Payments for 30 Days!**  
 \*Call J&R Corporate Sales for details at **1-800-221-3191** or **1-212-238-9080**  
**J&R CORPORATE SALES**

**To Order Toll Free and Receive a Free Catalogue**  
**24 Hours, 7 Days, Anywhere In The USA**  
**800-221-8180**  
**PARK ROW • NEW YORK • NY • 10038 FAX: 1-800-232-4432**  
 Not responsible for typographical or pictorial errors. Merchandise is brand-new, factory-fresh & 100% guaranteed! ♦Except where noted! Same quantities may be limited.  
 Circle 57 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

**Olympus**  
**Canon EOS-D30**  
 36-Bit USB Digital SLR Camera Body  
 •3 megapixel  
 •RGB digital capture with CMOS sensor •EF lens, EX Speedlite & Type I/II CompactFlash™ compatible  
 •Windows®/Mac®  
 •NTSC/PAL video •USB  
**\$2999.99** (CAN EOS/D30)  
**Olympus CAMELIA™ C-2040 Zoom - Digital Camera**  
 •2.11 megapixel •3x optical zoom lens/5x digital zoom •1.8" TFT LCD •BMB SmartMedia™  
 •S mode flash •USB •For Mac®/Windows® (OLM C2040ZOOM) ..... **\$499.99**  
**Olympus Brio™ D-100 Digital Camera**  
 •1.3 megapixel •F2.8 autofocus lens •TruePic technology •3 sec. shutter release •3 sec. shot-to-shot •USB  
 •BMB SmartMedia™ (OLM D100) ..... **\$249.99**  
**Olympus CAMELIA™ C-3040 ZOOM - Digital Camera**  
 •3.34 megapixel •Super Bright 1.8-2.6 3x zoom lens •1-2.5x digital zoom •1.8" TFT color LCD  
 •16MB SmartMedia™ •S-mode flash •USB for Mac®/Windows® •Remote (OLM C3040ZOOM) ..... **\$799.99**

**CANON Digital Camcorders**  
**Canon GL1**  
 Digital Camcorder  
 •3CCD image sensors •20x Fluorite optical/100x-digital zoom  
 •Optical stabilizer  
 •2.5" LCD •Color viewfinder  
**CALL FOR PRICE!** (CAN GL1)  
**ZR30MC Digital Camcorder** •2.5" color view screen  
 •2.5" LCD •10x-optical/200x-digital zoom •Image stabilizer •Digital photo mode •IEEE 1394 •8MB card (CAN ZR30MC) ..... **CALL!**

**SONY Digital Camcorders**  
**Sony DCR-VX2000**  
 3-CCD Digital Camcorder  
 •Memory Stick®  
 •VGA 640 x 480 still image res  
 •12x optical/48x digital zoom •Super SteadyShot® •iLINK™ •2.5" SwivelScreen™ •Color viewfinder  
**SONY. CALL FOR PRICE!** (SON DCRVX2000)  
**DCR-TRV30 Digital Handycam® Camcorder**  
 •1,550K pixel CCD •Carl Zeiss® Vario-Sonnar T lens-10x optical/120x digital zoom •3.5" SwivelScreen™ •Color viewfinder •Stabilizer •NightShot™ •iLINK™ (SON DCRTRV30) ..... **CALL!**

**Scanners**  
**EPSON Perfection™ 1640SU PHOTO**  
 Color Scanner with Transparency Adapter  
 •42-bit •1600 x 3200 dpi max. res.  
 •Adobe® PhotoDeluxe® & PhotoShop® 5.0 LE  
**\$369.99** (EPS 1640SUP)  
**Canon CanoScan™ NT2200 Flatbed Color Scanner** •USB/PC/Mac® (CAN NT2200) ..... **\$199.99**  
**Microtek ScanMaker® 8700 Flatbed Color Scanner** (MTK SCANMK8700) ..... **\$899.99**

**Matrox Video Editing**  
**Matrox RTMac matrox**  
 Realtime Native-DV Editor for Power Mac® G4  
 •Requires Final Cut Pro (2.0)  
 •Realtime native-DV editing with realtime effects for the Power Mac® G4  
**\$999.99** (MOX RTMAC)  
**Hot New Item!**

All Major Credit Cards Accepted  
**Overnight Delivery Available!**  
**Order Code: MWM0701**  
 (Prices Good Until 07/15/2001)





#1 Drive store on the Web! Check out more at [www.megahaus.com/mac](http://www.megahaus.com/mac)

## Monitors

### ViewSonic LCD Flat-Panel Monitor For UNDER \$500!!

15" Viewable (VE150) **\$489**  
See our complete selection on our website under the "Monitors" listing.



## Digital Cameras

### SONY

Take your pic!

- 8X Optical Zoom/ 16X Digital Zoom Lens w/ High-Speed Scan (MVC-FD92) \$575
- 10X Optical Zoom, 20X Digital Zoom w/ Auto Macro, 1600 x 1200 maximum resolution (MVC-FD95) \$928



## USB & 1394 Technology

USB 4x4x6 CD-Rewritable for PC or Mac (CDWS4EUSB) **\$204**

USB 250MB Zip Drive w/Software (ZIP250USB) **\$132**

USB to SCSI Adapter (USBSCSI) **\$69**

USB External Hard Drives w/Cable:  
10GB or 20GB (USB10/20GB) **\$155/\$165**  
30GB or 40GB (USB30/40GB) **\$185/\$199**

1394 PCI/MAC BOARD KIT (70HTL13941) **\$89**

1394 HUB (70HTL00030) **\$89**

1394 Repeater: (70HTL00020) **\$45**

1394 15 Ft. Cable: 6pin to 4pin (70CAB13943) **\$28**

1394 Sony 12x8x32 CD-RW (CRX1600LA2) **\$275**

## Hard Drive

### Quantum

18.4 GB

10,000 RPM

8 MB Buffer

SCSI Ultra 160 **\$259** Ext. **\$389**  
Int. (TY318400LW) (TY318400LWX)



## CD-Rewritable Drive

### YAMAHA

16x10x40 SCSI CD-RW w/Mastering Soft. & 1 disk

Int. (CRW2100SZ) **\$259**

Ext. (CRW2100SZX) **\$335**



## Hard Drive

### Seagate

9.2 GB / 10,000 RPM

4 MB Buffer

SCSI Ultra 160 **\$195** Ext. **\$325**  
Int. (ST39205LW) (ST39205LWX)



## 250MB ZIP Drive

250MB ZIP Ext.

Drive **\$109** (ZIP250)

SCSI Mac or PC



250MB disks **\$17 each** (ZIP250C)

## HARD DRIVES

### Quantum

ULTRA 160/m SCSI Will work on older SCSI, Ultra Wide, Ultra-2 controllers.

9.1GB	7200	4MB	XC309100LW	\$176
9.2GB	10000	8MB	TY309200LW	\$195
18.4GB	7200	4MB	XC318400LW	\$245
18.4GB	10000	8MB	TY318400LW	\$259
36.7GB	7200	4MB	XC336700LW	\$425
36.7GB	10000	8MB	TY336700LW	\$465
73.4GB	10000	8MB	TY373400LW	\$875

IDE ULTRA ATA/100

10.0GB	4500	128K	QML10000LD	\$78
10.2GB	7200	2MB	QMP10200AS	\$85
20.0GB	4500	128K	QML20000LD	\$89
20.5GB	7200	2MB	QMP20500AS	\$107
30.0GB	4500	128K	QML30000LD	\$102
30.0GB	7200	2MB	QMP30000AS	\$128
40.0GB	7200	2MB	QMP40000AS	\$148
40.0GB	4500	128K	QML40000LD	\$118
60.0GB	7200	2MB	QMP60000AS	\$209



ULTRA 160 SCSI

9.1GB	10,000	4MB	07N3220	\$176
18.3GB	10,000	4MB	07N3210	\$235
36.4GB	10,000	4MB	07N3200	\$429

IDE Ultra ATA/100

15.0GB	7200	2MB	07N5637	\$98
20.0GB	7200	2MB	07N6652	\$112
30.0GB	7200	2MB	07N5639	\$138
45.0GB	7200	2MB	07N6654	\$155
60.0GB	7200	2MB	07N6655	\$229
75.0GB	7200	2MB	07N3935	\$270

ULTRA 320 SCSI 300MB/Sec Coming Soon - Call for Details!

## WESTERN DIGITAL

IDE Ultra ATA/100

10.0GB	5400	2MB	WD100EB	\$76
20.0GB	5400	2MB	WD200AB	\$85
20.0GB	7200	2MB	WD200BB	\$98
30.0GB	7200	2MB	WD300BB	\$118
40.0GB	7200	2MB	WD400BB	\$138
60.0GB	5400	2MB	WD600AB	\$165
60.0GB	7200	2MB	WD600BB	\$205
80.0GB	5400	2MB	WD800AB	\$210
80.0GB	7200	2MB	WD800BB	\$285

## FUJITSU

IDE Ultra ATA/100

10.2GB	5400	512K	MPG3102AT	\$83
20.4GB	5400	512K	MPG3204AT	\$93
30.7GB	5400	512K	MPG3307AT	\$107
40.0GB	5400	512K	MPG3409AT	\$119

## Maxtor

IDE ULTRA ATA/100

10.2GB	7200	2MB	M5T010H1	\$89
20.0GB	7200	2MB	M5T020H2	\$105
30.0GB	7200	2MB	M5T030H3	\$128
40.0GB	7200	2MB	M5T040H4	\$140
60.5GB	7200	2MB	M5T060H6	\$207
81.9GB	5400	2MB	M98196H8	\$239

## HARD DRIVES

### Seagate

(Call for deals on our externals)

ULTRA SCSI

18.4GB 7200 2MB ST318417N **\$229**

ULTRA WIDE SCSI

18.4GB 7200 2MB ST318417W **\$229**

ULTRA 160 SCSI

9.2GB 10,000 4MB ST39205LW **\$195**

18.2GB 10,000 4MB ST318405LW **\$259**

18.4GB 7200 2MB ST318437LW **\$225**

18.4GB 15,000 4MB ST318451LW **\$355**

36.7GB 7200 2MB ST33673LW **\$409**

36.7GB 10,000 4MB ST336705LW **\$468**

73.4GB 10,000 4MB ST373405LW **\$885**

73.4GB 10,000 16MB ST373405LWV **\$919**

181.6GB 7200 4MB ST1181677LW **\$1739**

181.6GB 7200 16MB ST1181677LWV **\$1835**

IDE ULTRA ATA/100

20.4GB 5400 512K ST320413A **\$90**

20.4GB 7200 2MB ST320414A **\$105**

30.0GB 5400 512K ST330621A **\$102**

30.6GB 7200 2MB ST330620A **\$132**

40.8GB 5400 512K ST340823A **\$119**

40.8GB 7200 2MB ST340824A **\$148**

Visit our website under [www.megahaus.com/sea](http://www.megahaus.com/sea)

## 2.5" IDE LAPTOP

6.0GB 9.5mm Toshiba MK6015MAP **\$89**

10.0GB 9.5mm Toshiba MK1017GAP **\$98**

20.0GB 9.5mm Toshiba MK2016MAP **\$139**

30.0GB 9.5mm Toshiba MK3017GAP **\$259**

5.0GB 9.5mm IBM 07N4391 **\$89**

10.0GB 9.5mm IBM 07N4390 **\$98**

20.0GB 9.5mm IBM 07N4388 **\$129**

32.0GB 12.5mm IBM 07N4138 **\$415**

6.0GB 9.5mm Hitachi DK23BA60 **\$99**

10.0GB 9.5mm Hitachi DK23BA10 **\$107**

20.0GB 9.5mm Hitachi DK23BA20 **\$145**

## PRINTERS

HP DeskJet 840C Color InkJet C6414A **\$104**

HP DeskJet 950C Color InkJet C6428A **\$203**

HP DeskJet 970Cxi Color InkJet C6429A **\$298**

HP DeskJet 1220Cxi Color InkJet C2694A **\$481**

HP Business 2200Cxi Color InkJet C2690A **\$481**

HP Business 2500CM Color InkJet C2685A **\$1459**

## CONTROLLERS

WD 1394 PCI Desktop Card (PC/Mac) WDAD002RNW **\$49**

WD 1394 PC CardBus for Notebooks WDAD003RNW **\$95**

Sonnet Tempo Ultra ATA/66 PCI Card TAT-066 **\$99**

Sonnet Tempo RAID66 PCI Card TAT-066R **\$192**

Adaptec PowerDomain SCSI Card APD29160MAC **\$269**

Adaptec PowerDomain PCI Card APD39160MAC **\$385**

Let us custom-build your next RAID array using high-quality CRU cases! Call for pricing and availability!

We have more than 90 power backup solutions and can create custom configurations to suit your networking and data backup needs. **CALL US.**



## CD ROM

• SCSI INTERNALS •

Teac	CD532S	32X	85ms	\$70
NEC	CDR3010	40X	85ms	\$65
Toshiba	XM6401B	40X	85ms	\$68
Plextor	PX40TS	40X	85ms	\$87

• WIDE SCSI •

Plextor PX40TSUW 40X 85ms **\$98**

Call About Our SCSI External Drive Deals

• IDE •

Teac	CD540E	40X	85ms	\$42
Mitsumi	CRMCFX48X	48X	65ms	\$37
Toshiba	XM6702B	48X	85ms	\$43
Sony	CDU5211	52X	85ms	\$37
Acer	CD656A	52X	90ms	\$40
Creative	SBCD52	52X	100ms	\$37

• CD CHANGER •

Pioneer 24 X6 Disc Ext. SCSI (DRM6324X) **\$389**

## TAPE BACKUP

• 4mm DAT •

2-4GB	66MB/min	Seagate STD24000N	\$415
4-8GB	30MB/min	Seagate STD28000N	\$219
4-8GB	60MB/min	HP C1599A1	\$525
4-8GB	66MB/min	Seagate DDS-2 STD28000N	\$515
4-8GB	90MB/min	Sony SDT7000A1	\$429
12-24GB	144MB/min	Sony DDS-3 SDT9000A1	\$569
12-24GB	120MB/min	HP DDS-3 C1554A1	\$695
20-40GB	288MB/min	Sony DDS-4 SDT11000A1	\$829
48-96GB	66MB/min	Seagate DDS-2 STL49600N	\$1629
72-144GB	120MB/min	HP 6 tape load DDS-3 C5648A	\$1639

• EXABYTE 8mm DAT •

7-14GB	120MB/min	ELIANT820	\$1199
20-40GB	360MB/min	EXB8900	\$1969
140-280GB	180MB/min	EZ17SWK	\$4569

• QUANTUM DLT •

20-40GB	180MB/min	DLT4000	\$1055
40-80GB	600MB/min	DLT8000	\$3075

• USB •

4-8GB	120MB/min	Seagate STT681U-R	\$299
10-20GB	120MB/min	Seagate STT6201U-R	\$339

## ZIP, JAZZ & OPTICAL

Iomega

100MB Zip Ext. USB ZIP100USB **wow! \$77**

250MB Zip Ext. SCSI for PC or Mac ZIP250 **\$109**

2GB Jaz Internal SCSI JAZ21 **\$249**

2GB Jaz External SCSI JAZ2X **\$319**

1GB Jaz disk 2-4/5-9/10+ **\$80/77/75**

2GB Jaz disk 2-4/5-9/10+ **\$85/80/77**

Sony Magneto Optical

5.2GB SCSI-2 Int. 4MB buffer (SMOF551) **\$1375**

5.2GB SCSI-2 Ext. 4MB buffer (SMOF551X) **\$1435**

5.2GB opt. media (SMAX5.2) 1-4/5-9/10+ **\$83/80/77**

Maxoptix Optical

2.6GB SCSI Ext. 4MB buffer (TS-2600XM) **\$1159**

5.2GB SCSI Ext. 8MB buffer (T6-5200XM) **\$1439**

## CD MEDIA

Nobody Beats MegaHaus' Media Pricing!

CD RECORDABLE MEDIA

12X Max Speed S/20/50/100 Pack





Advertise in Macworld's  
OS X Showcase

Contact your  
Account Manager  
today

800-597-1594



Visit

[www.hp.com/go/mac-connect](http://www.hp.com/go/mac-connect)  
for hp Mac OS X information

## STONE STUDIO



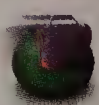
**Create®**

create entire websites, vector artwork, drawings



**GIFfun™**

make animated web graphics



**PackUp&Go™**

compress and uncompress files



**SliceAndDice™**

cut up pictures for online use



**PhotoToWeb®**

make photo albums and websites



**TimeEqualsMoney™**

billing & invoicing



**PStill™**

make PDF and view EPS files



FOR MAC OS X  
DOWNLOAD OR  
CD-ROM AVAILABLE



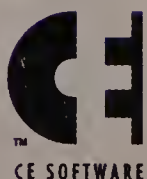
[www.STONE.com](http://www.STONE.com)

# QuicKeys®



Coming Soon For Mac OS X

[www.cesoft.com](http://www.cesoft.com)





Check us out on the Web —  
<http://www.macworld.com>



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

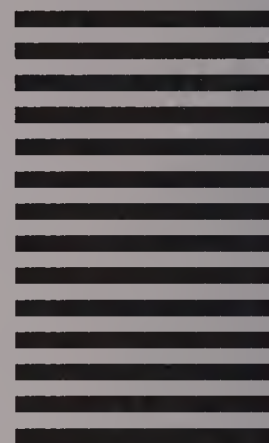
**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

**Macworld<sup>®</sup>**

Subscription Department  
PO Box 54506  
Boulder, CO 80323-4506





An Asanté router is not just a good buy, it's the *best* buy – and *best* value.



FR3004C with back-up modem  
FR3004LC with back-up modem and parallel printer port



"Best Buy."  
FriendlyNET FR3004LC  
January 2001



"Best Value."  
FriendlyNET Cable/DSL Router  
October 2000

Asanté's new FriendlyNET® routers are ideal for sharing high-speed Internet connections in your home or office. Just connect multiple Macs and PCs to share your cable modem or DSL Internet service. Advanced firewall security with integrated 4-port 10/100 switch gives you the power and flexibility to start or expand your network.

Feature Comparison	Asanté FR3004 Series	Linksys BEFSR41	Netgear RT311
Web-Based Configuration	Yes	Yes	Command line required for many features
Ideal for Mac/PC Networks	Yes	No	No
Advanced Security:			
Log intrusion attempts	Yes	No	No
Ports open on-demand	Yes	No, always open	No, always open
Group security	Yes	No	No
Physical security	Yes	No	No
Backup Modem Port	Yes	No	No
Print Server	Yes <sup>1</sup>	Add \$170 for 1 port (PPSX1)	Add \$245 for 3 ports (PS113)
Performance	Best	Slower <sup>11</sup>	Slowest <sup>11</sup>

**ASANTÉ**

www.asante.com

Visit us at Macworld New York  
Booth 1425

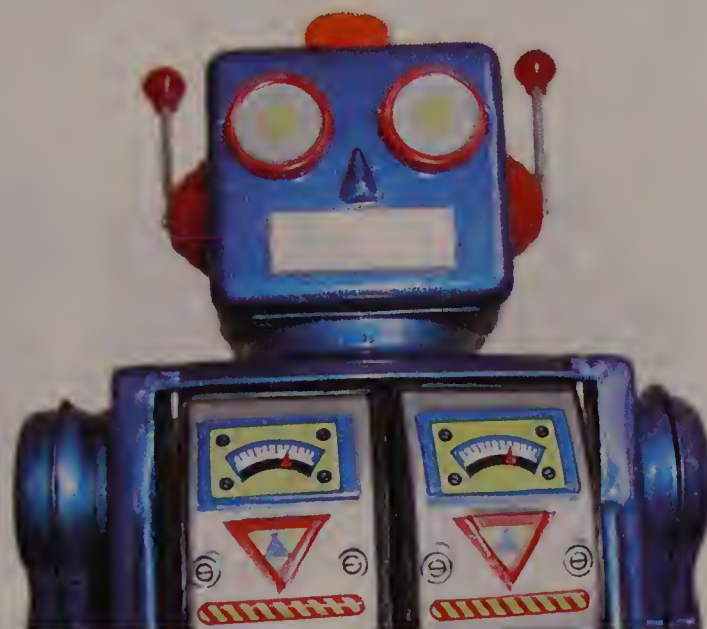
Special promotional pricing – save \$20!

Call 800-566-6680 or visit our website at

asante.com/promo/mac

© 2001 Asanté Technologies, Inc. Asanté and FriendlyNET are registered trademarks of Asanté Technologies. The Asanté logo is a trademark of Asanté Technologies. All rights reserved. <sup>1</sup>Asanté FriendlyNET router model FR3004LC. <sup>11</sup>Practically Networked benchmarked the Asanté FriendlyNET FR3004 series to be significantly faster than the Linksys (up to 25% faster) and Netgear (up to 42% faster) routers.

A NEW SYSTEM HAS ARRIVED.



WE'RE READY. ARE YOU?

Mac OS X is out there. How long until it reaches your Macs? Do you have enough time to do all this:

- ✓ Inventory all installed software
- ✓ Check software versions
- ✓ Check hard disks and memory on all computers
- ✓ Identify hardware upgrade needs
- ✓ Print summary reports

With netOctopus, you can do all of that with a few mouse clicks. Then, when OS X arrives, use the new version of netOctopus to distribute all of your new software throughout your network seamlessly.

Timbuktu Pro, the leading remote control software for the Mac for over ten years, is an indispensable utility. Timbuktu gives you:

- ✓ Full Remote Control over any kind of connection
- ✓ Lightning Fast File Transfers
- ✓ Text chat
- ✓ Instant messaging
- ✓ Voice intercom

Using either tool alone, or integrated seamlessly together, you'd practically be ready for OS X today. Without them, you may be running out of time.

Timbuktu Pro

netOctopus

www.macosxready.com

© 2001 Netopia, Inc. All rights reserved.



# **Compare the best Mac products at the best prices.**



The Macworld PriceFinder reviews and compares out-the-door prices of available Macintosh products from a wide array of online vendors. You'll quickly find the best product for your needs, and you'll also find the best price. Shop and compare computers, new and upgrade software, printers and more – it's all there.

The Macworld PriceFinder is your comprehensive resource for choosing the best Macintosh products, getting the lowest prices and buying with confidence from the vendor of your choice.

## **The Macworld PriceFinder**

[www.macworldpricefinder.com](http://www.macworldpricefinder.com)



## Macworld Showcase Featured Advertisers

<b>Developer Showcase</b>	<b>Lind Electronics</b> <a href="http://lindelectronics.com">lindelectronics.com</a>	<b>Interland</b> <a href="http://interland.net">interland.net</a>	<b>MacPro</b> <a href="http://mac-pro.com">mac-pro.com</a>
<b>Formac</b> <a href="http://formac.com">formac.com</a>	<b>Marathon Computer</b> <a href="http://marathoncomputer.com">marathoncomputer.com</a>	<b>Postcard Press</b> <a href="http://postcardpress.com">postcardpress.com</a>	<b>Mac Power</b> <a href="http://macpowerinc.com">macpowerinc.com</a>
<b>Granite Digital</b> <a href="http://scsipro.com">scsipro.com</a>	<b>IntelliTech</b> <a href="http://maclabel.com">maclabel.com</a>	<b>Modern Postcard</b> <a href="http://modernpostcard.com">modernpostcard.com</a>	<b>AcademicSuperstore</b> <a href="http://academicsuperstore.com">academicsuperstore.com</a>
<b>Orange Micro</b> <a href="http://orangemicro.com">orangemicro.com</a>	<b>Photo Control</b> <a href="http://photo-control.com">photo-control.com</a>	<b>Silicon Valley CD</b> <a href="http://svcd.net">svcd.net</a>	<b>Software Showcase</b> <a href="http://softwareshowcase.com">softwareshowcase.com</a>
<b>Mace Group</b> <a href="http://macally.com">macally.com</a>	<b>Itsco</b> <a href="http://itsco.net">itsco.net</a>	<b>Creative Juices</b> <a href="http://bigposters.com">bigposters.com</a>	<b>Mac of all Trades</b> <a href="http://macofalltrades.com">macofalltrades.com</a>
<b>CompuCable</b> <a href="http://compucable.com">compucable.com</a>	<b>Worth Data</b> <a href="http://barcodehq.com">barcodehq.com</a>	<b>Show and Tell</b> <a href="http://show-tell.net">show-tell.net</a>	<b>MacResQ</b> <a href="http://macresq.com">macresq.com</a>
<b>ADS Technologies</b> <a href="http://adstech.com">adstech.com</a>	<b>Services Showcase</b>	<b>Presentation Services</b> <a href="http://imagers.com">imagers.com</a>	<b>Data Tech Remarketing</b> <a href="http://datatech-rmkt.com">datatech-rmkt.com</a>
<b>Dr. Bott</b> <a href="http://drbott.com">drbott.com</a>	<b>Microcom</b> <a href="http://mcrecovery.com">mcrecovery.com</a>	<b>Copy Craft</b> <a href="http://copycraft.com">copycraft.com</a>	<b>Shreve Systems</b> <a href="http://shrevesystems.com">shrevesystems.com</a>
<b>Griffin Technology</b> <a href="http://griffintech.com">griffintech.com</a>	<b>Action Front Data Recovery</b> <a href="http://datarec.com">datarec.com</a>	<b>Direct Showcase</b>	<b>MCE Systems</b> <a href="http://powerbook1.com">powerbook1.com</a>
<b>Keyspan</b> <a href="http://keyspan.com">keyspan.com</a>	<b>Lazarus</b> <a href="http://lazarus.com">lazarus.com</a>	<b>POS Direct</b> <a href="http://posdirect.com">posdirect.com</a>	<b>PowerMax</b> <a href="http://powermax.com">powermax.com</a>
<b>On A Dime</b> <a href="http://onadime.com">onadime.com</a>	<b>Drive Savers</b> <a href="http://drivesavers.com">drivesavers.com</a>	<b>Abe's of Maine</b> <a href="http://abesofmaine.com">abesofmaine.com</a>	<b>PowerOn Computers</b> <a href="http://poweron.com">poweron.com</a>
<b>Biomorph</b> <a href="http://biomorphdesk.com">biomorphdesk.com</a>	<b>Mac Academy</b> <a href="http://macacademy.com">macacademy.com</a>	<b>The Camera Zone</b> <a href="http://thecamerazone.com">thecamerazone.com</a>	<b>Memory Masters</b> <a href="http://18004memory.com">18004memory.com</a>
<b>IPProof Systems</b> <a href="http://iproofsystems.com">iproofsystems.com</a>	<b>NetNation</b> <a href="http://netnation.com">netnation.com</a>	<b>Creation Engine</b> <a href="http://madaboutmac.com">madaboutmac.com</a>	<b>Mac Solutions</b> <a href="http://macsolutions.com">macsolutions.com</a>
<b>BellStor</b> <a href="http://bellstor.com">bellstor.com</a>	<b>Total Recall</b> <a href="http://totalrecall.com">totalrecall.com</a>	<b>Journey Educational Mktg.</b> <a href="http://journeyed.com">journeyed.com</a>	<b>MegaMacs</b> <a href="http://megamacs.com">megamacs.com</a>
			<b>Data Memory Systems</b> <a href="http://datamem.com">datamem.com</a>

For more information contact Niki Stranz or Carol Johnstone at (800) 597-1594.



### CONNECT



### CREATE



### STORE



\$299

DV Editing with PYRO FireWire Host Card  
and Full Version Adobe Premiere 6.0



\$149

Convert Your Hard Drive, CD-ROM, CD-RW, or  
DVD-ROM/R-RW Drive To FireWire

Available at: Fry's, Safe Harbor, B&H Photo, Video Guys, DV Direct, Mac Zones,  
Mac Mall, Data Vision, CWOL.com, J&R Music World, Micro Center, and more!

800.888.5244 • 562.926.1928  
**www.adstech.com**



# Custom **ULTRA 160 SCSI LVD** - **Ultra 100 IDE** - **Firewire 1394**

If you want Ultra SCSI Performance use our Quality Cables & Active Terminators. High Performance Solutions for Ultra100 IDE and Firewire Improves Performance

## SCSI Ultra 160 RAID

**SCSIVue™ SCSI RAID Enclosures**  
Ultra 160 SCSI Towers  
2 Bay 29 Bay

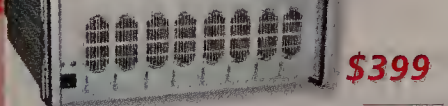


**SCSIVue™ Ultra 160 SCSI Cases**



From: **\$99**  
Options:  
• Ultra 160 LVD Cable Kit  
• Dual Hot-Swap Redundant PS  
• Hot-Swap SCSI Bays w / Bracket  
• 2-3 Fan Bay Coolers w / Brk  
• Temp Alarm System

**SCSIVue™ RackMount RAID**  
Our 8 Bay Rack Mount Enclosure includes a 250 watt power supply. These cases are commercial quality. Optional rails are also available.

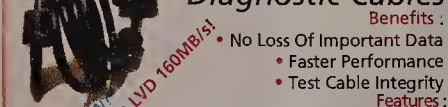


**Bay Cooler Kit** keeps those **HOT Ultra SCSI Drives** COLD as ICE!  
Dual Fan & Bracket **\$29**  
HOT SWAP Pull Out Bays  
Compatible with all 50 pin & 68 pin SCSI Buses up to Fast SCSI 2. From: **\$79**

From: **\$99** **Active Digital SCSI Repeater**  
• Models for all SCSI types  
• Fixes SCSI Cable Problems  
• Doubles Cable Length (up to 18')



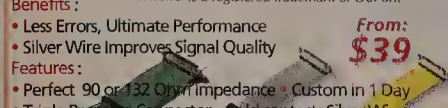
**SCSIVue™ Gold Diagnostic Cables**  
Benefits:  
• No Loss Of Important Data  
• Faster Performance  
• Test Cable Integrity  
Features:  
• Diagnostic Indicators  
• Large Ferrite Filters  
• Triple Shielding (Unique Design)  
• Double Gold 20u" Plated Connectors  
• Extra Heavy 26 Gauge Wire • 100 Styles in Stock



**Gold VHD Ultra160 SCSI Cable**  
From: **\$109**  
Features:  
• New .8mm Ultra 160 LVD SCSI Connector  
• Triple Shielding (Unique Design)  
• Double Gold 20u" Plated Connectors  
• Diagnostic Indicators • Large Ferrite Filters



**LVD-TPO Teflon® Internal Cables**  
Teflon® is a registered trademark of DuPont  
Benefits:  
• Less Errors, Ultimate Performance  
• Silver Wire Improves Signal Quality  
Features:  
• Perfect 90 or 132 Ohm Impedance • Custom in 1 Day  
• Triple Pronged Connector • Gold contacts Silver Wire

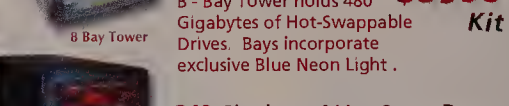


68 Pin Replacement Cable for External Drive Cases.  
TEFLON TPO

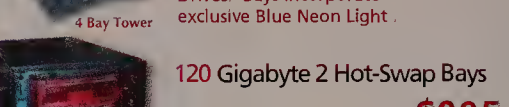
## Speed Breakthru...40 MB/s!!!

**FireVue™ FireWire RAID systems** offer up to 480 gigabytes of storage. Using the second generation of FireWire. We are now able to get a true 40MB/s data transfer rate; 3 Times faster than the competition!

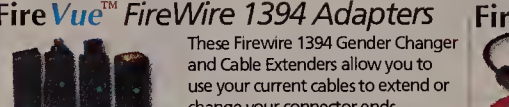
**480 Gigabyte 8 Hot-Swap Bays**  
B - Bay Tower holds 480 Gigabytes of Hot-Swappable Drives. Bays incorporate exclusive Blue Neon Light. **\$3995 Kit**



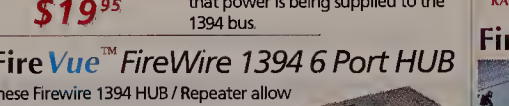
**240 Gigabyte 4 Hot-Swap Bays**  
4 - Bay Tower holds 240 Gigabytes of Hot-Swappable Drives. Bays incorporate exclusive Blue Neon Light. **\$1995 Kit**



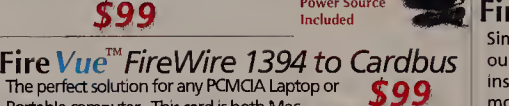
**120 Gigabyte 2 Hot-Swap Bays**  
2 - Bay Tower holds 120 Gigabytes of Hot-Swappable Drives. Bays incorporate exclusive Blue Neon Light. **\$995 Kit**



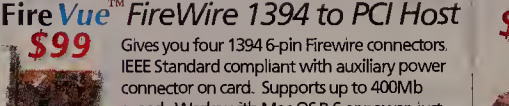
**FireVue™ FireWire 1394 Adapters**  
These Firewire 1394 Gender Changer and Cable Extenders allow you to use your current cables to extend or change your connector ends. Combined with the added versatility that these devices offer is the ability to also monitor 1394 power. Our exclusive LED circuit lets you know that power is being supplied to the 1394 bus. **\$19.95**



**FireVue™ FireWire 1394 6 Port HUB**  
These Firewire 1394 HUB / Repeater allow you to connect up to 6 devices. They can also be wired together to offer unlimited capabilities. Power Supply guarantees proper operation of many devices at the same time and rejuvenates the lines. **\$99**



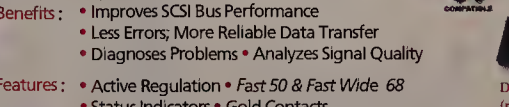
**FireVue™ FireWire 1394 to Cardbus**  
The perfect solution for any PCMCIA Laptop or Portable computer. This card is both Mac and PC compatible. Gives you two 1394 6-pin Firewire connectors. Supports up to 400Mb speed. Optional Power Supply. **\$99**



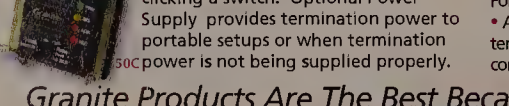
**FireVue™ FireWire 1394 to PCI Host**  
Gives you four 1394 6-pin Firewire connectors. IEEE Standard compliant with auxiliary power connector on card. Supports up to 400Mb speed. Works with Mac OS 8.6 or newer, just plug it in. Also supports Windows 98SE, 2000, and 2000 Server. **\$99**



**SCSIVue™ Active Terminator**  
Ultra-160 LVD  
Benefits:  
• Improves SCSI Bus Performance  
• Less Errors; More Reliable Data Transfer  
• Diagnoses Problems • Analyzes Signal Quality  
Features:  
• Active Regulation • Fast 50 & Fast Wide 68  
• Status Indicators • Gold Contacts



**Hot Swap Powered Terminator**  
Now you can safely remove any SCSI device from a SCSI chain by simply clicking a switch. Optional Power Supply provides termination power to portable setups or when termination power is not being supplied properly. **\$49**

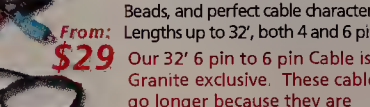


**Granite Products Are The Best Because They're Engineered Right.**

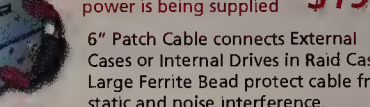


Our Hot-Swappable RAID Systems offer quick and easy bay interchangeability and complete fault tolerance. Each Hot-Swap Bay includes 2 fans and our exclusive Blue Neon Light. Systems can be custom configured to your specific needs. Our RAID Systems use standard IDE ATA100 Drives offering low cost and high reliability. Each system uses Maxtor DiamondMax 60 Gigabyte 7200rpm drives with three year warranties.

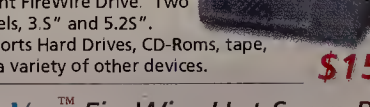
**FireVue™ Gold FireWire 1394 Cables**  
Diagnostic LED monitors power on the Firewire cable. Gold Connectors, Ferrite Beads, and perfect cable characteristics. Lengths up to 32', both 4 and 6 pins. Our 32' 6 pin to 6 pin Cable is a Granite exclusive. These cables go longer because they are made better! 2 x Specification. **From: \$29**



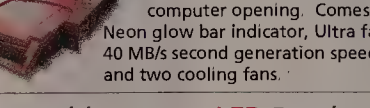
**FireVue™ FireWire 6" Patch Cables**  
LED shows that power is being supplied **\$19.95**  
6" Patch Cable connects External Cases or Internal Drives in Raid Cases. Large Ferrite Bead protect cable from static and noise interference.



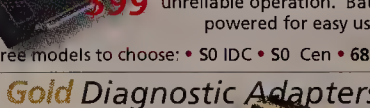
**FireVue™ FireWire Case Kits**  
Simply add your IDE drive to our case and you have an instant FireWire Drive. Two models, 3.5" and 5.25". Supports Hard Drives, CD-Roms, tape, and a variety of other devices. **\$159**



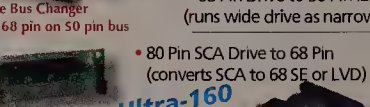
**FireVue™ FireWire Hot-Swap Bay**  
The Hot-Swap FireWire Bays fit all standard 5 1/4" openings. Can be used in any standard enclosure or computer opening. Comes with Neon glow bar indicator, Ultra fast 40 MB/s second generation speed, and two cooling fans. **\$159**



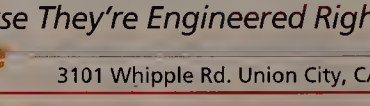
**SCSI Cable Tester - LED Readout**  
Special Package of all 3: **\$99**  
This Digital SCSI Cable Tester can test all the popular cable styles for opens, shorts, and unreliable operation. Battery powered for easy use and



**Gold Diagnostic Adapters**  
• Both 50 pin and 68 pin (all combinations) **From: \$39**  
Gender Changer  
• 68 Pin Drive to 50 Pin IDC (runs wide drive as narrow)



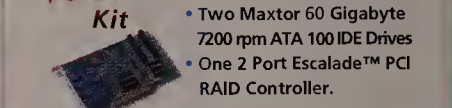
For Adaptec Ultra Wide Cards  
• Adapters with partial termination built in for 68 to 50 converters (converts Host Adapter)  
• 80 Pin SCA Drive to 68 Pin (converts SCA to 68 SE or LVD)  
• 68 Pin to 50 Pin Centronics or 50 Pin MicroD Adapters



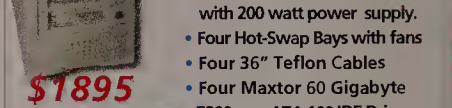
## IDEVue™ IDE RAID Systems

Windows and Linux ONLY  
120 Gigabyte 2 Hot-Swap Bays

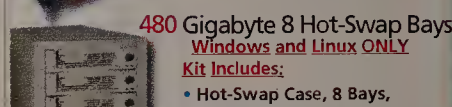
**Kit Includes:**  
• Hot-Swap Case, 2 Bays, with 65 watt power supply.  
• Two Hot-Swap Bays with fans  
• Two 36" Teflon Cables  
• Two Maxtor 60 Gigabyte 7200 rpm ATA 100 IDE Drives  
• One 2 Port Escalade™ PCI RAID Controller. **\$955 Kit**



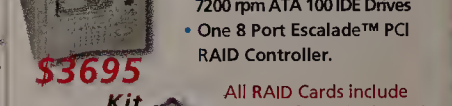
240 Gigabyte 4 Hot-Swap Bays  
Windows and Linux ONLY  
**Kit Includes:**  
• Hot-Swap Case, 4 Bays, with 200 watt power supply.  
• Four Hot-Swap Bays with fans  
• Four 36" Teflon Cables  
• Four Maxtor 60 Gigabyte 7200 rpm ATA 100 IDE Drives  
• One 4 Port Escalade™ PCI RAID Controller. **\$1895 Kit**



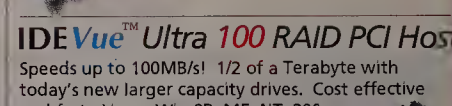
480 Gigabyte 8 Hot-Swap Bays  
Windows and Linux ONLY  
**Kit Includes:**  
• Hot-Swap Case, 8 Bays, with 250 watt power supply.  
• Eight Hot-Swap Bays with fans  
• Eight 36" Teflon Cables  
• Eight Maxtor 60 Gigabyte 7200 rpm ATA 100 IDE Drives  
• One 8 Port Escalade™ PCI RAID Controller. **\$3695 Kit**



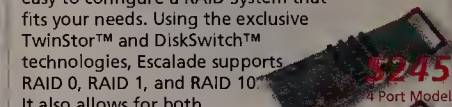
All RAID Cards include support for RAID 0, 1, 10, Hot-Swap and Hot-Spare. Ultra Fast 100MB/s with low CPU overhead. These cards are unbelievably fast.



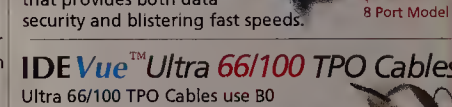
**IDEVue™ Ultra 100 RAID PCI Host**  
Speeds up to 100MB/s! 1/2 of a Terabyte with today's new larger capacity drives. Cost effective and fast. Linux, Win 9B, ME, NT, 20C  
Raid 0, 1, 10, Hot-Swap Hot-Spare Support  
Offered in three packages, 2 Drive, 4 Drive, and 8 Drive models, it is now easy to configure a RAID System that fits your needs. Using the exclusive TwinStor™ and DiskSwitch™ technologies, Escalade supports RAID 0, RAID 1, and RAID 10. It also allows for both HOT-SWAP and HOT SPARE support. These exclusive technologies create an environment that provides both data security and blistering fast speeds.



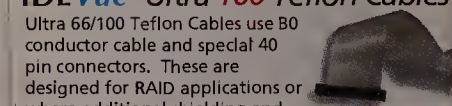
**IDEVue™ Ultra 66/100 TPO Cables**  
Ultra 66/100 TPO Cables use B0 conductor cable and special 40 pin connectors. The best you can buy for internal or external use. **From: \$29.95**



**IDEVue™ Ultra 100 Teflon Cables**  
Ultra 66/100 Teflon Cables use B0 conductor cable and special 40 pin connectors. These are designed for RAID applications or where additional shielding and protection is required. **From: \$29.95**

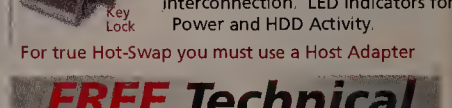


**IDEVue™ Ultra 66/100 Hot Swap Bay**  
The IDE Ultra66/100 Hot Swap Bay works with hard drives and removable drives. Includes cooling fan, key lock, and 96 pin high reliability interconnection. LED indicators for Power and HDD Activity. **\$39.95**



For true Hot-Swap you must use a Host Adapter

**FREE Technical Support!!!**  
Available to everyone, customer or not.





# UPGRADE YOUR MAC WITH FIREWIRE

## FireWire Web Cam

iBOT harnesses the speed and power of FireWire unmatched by the slower, fuzzy USB based web cams. With a data transfer rate that's 16 times faster than traditional USB web cams, you'll experience high quality, clear video. The iBOT is great for video teleconferencing, video e-mail, and home movie making with the included software. The pro version has additional software and a microphone.



**iBOT**

**\$119**

**MICRO CENTER**  
THE COMPUTER DEPARTMENT STORE

**ClubMac**  
(800)217-9153

**Fry's**

Info: [www.orangemicro.com](http://www.orangemicro.com)  
Orders: [www.1394firestation.com](http://www.1394firestation.com)

**Orange Micro inc.**  
The FireWire Specialist

## FireWire + USB PCI Board

Check out the slot saving advantages of adding FireWire + USB to your computer with a single OrangeLink+ card. Add two FireWire ports and two USB ports to your computer on one board. This will save you a valuable PCI slot. Take full advantage of the latest technology with IEEE-1394 peripherals and USB devices. The OrangeLink+ FireWire + USB PCI Board ships with video editing software. With OrangeLink+, you can make desktop movies with your Digital Video (DV) camcorder. Save money and a slot with this great board!



**FireWire + USB PCI**  
**\$139**

## Other OrangeLink FireWire Products

- FireWire + SCSI Board \$229 80MB/sec SCSI; includes video editing software and cable
- FireWire PCI Board \$69 includes video editing software and cable
- FireWire CardBus PC Card \$99 includes video editing software and cable
- FireWire to SCSI Converter \$99 connect SCSI through your FireWire ports
- FireWire Hub \$99 5 additional ports and cable
- FireWire Repeater \$49 15 ft. 1394 extension cable
- Grappler+ SCSI+Serial \$99 10MB/sec SCSI and serial and cable
- Grappler SCSI Boards \$49 - \$69 10MB/sec and 20MB/sec SCSI and cable

Circle 61 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

**macally**

**webkey**

USB Wireless Multimedia Keyboard



**macally**  
**AirStick**



**macally**  
**loptinet**



**PCI FireWire/USB**



**macally**

**M**acally is proud to bring you the latest USB and FireWire peripherals for Mac users. Our full line of products are specifically designed for your Mac to improve your productivity. Please visit our website to see what Macally has to offer for all your peripheral needs. We work hard to provide you with the best peripherals for your Mac.

**Call us for dealers near you 1-800-644-1132 or visit us at: [www.macally.com](http://www.macally.com)**

All trademark or registered trademarks are the property of their respective owners

Circle 159 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



# Shop Formac!

Visit our website for the easiest and most convenient way to buy the best products for your Mac.

[www.formac.com](http://www.formac.com)



## Producers Wanted!

### Formac studio™ Best of Show at MacWorld SF!

Convert analog video to high-quality DV

- Hardware CODEC: Capture video full-screen at 30 frames per second with digital audio quality (48kHz @ 16 bit)
- Real-time and frame-accurate editing in native DV
- Input and output for Composite Video (RCA), S-Video, Stereo Audio and two FireWire ports
- Built-in Stereo TV/FM Tuner (NTSC). Convert TV into DV!
- Includes web tools to create web enabled movies
- FireWire interface, hot-swappable and bus powered\*



From  
**\$399**  
FS 1042-0C

## Rip, Mix and Burn - with Style!



### Formac cdrw™

- Ultra fast FireWire CD-RW technology
- BURN-Proof technology eliminates buffer underrun errors
- 16X/10X/40X burns complete 650MB disc in less than 5 minutes!
- FireWire interface: hot-swappable and bus powered\*
- Includes Adaptec Test

16X/10X/40X

Only  
**\$289**

FDR 1016-1



## High capacity, Low price!



### Formac dvdram™

The FireWire storage solution

- 9.4 GB on removable cartridges
- Lowest cost per megabyte (less than one cent per megabyte)
- FireWire interface: hot-swappable and bus powered\*

Only  
**\$499**

FDD 1094-1



Want to order by phone? Call us at 1-877-4Formac (1.877.436.7622)

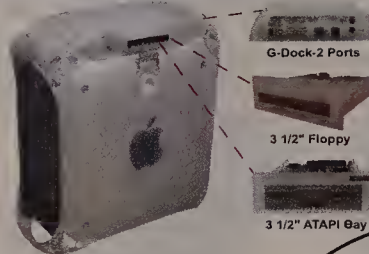


Also available through mail order at ClubMac, MacWarehouse and Outpost.com; or at Formac Certified Reseller. (Please see our website for locations). Call us for Education institution prices.

\*Please check our website for Macintosh computers that support bus powered devices. © 2001, Formac Electronic, Inc. Formac, and in other countries where Formac products are sold or distributed. Other brands and names are the property of their respective owners.

### G-Dock-2

Simply the best add-on accessory for G-3 and G-4 computers



### FireXpress CD-RW

IEEE 1394 External CD-RW  
8 x 4 x 32

### FireXpress 250

External IDE/FireWire hard drive conversion kits; easily convert 2.5" and 3.5" IDE hard drive to FireWire interface

### FireXpress 350

### iDock-2

All-in-one USB swivel base hub for iMacs; provides 4 USB ports, two Apple Geo serial ports, one ADB port (Floppy drives included)

### onCue

USB Macintosh start up key, a must-have accessory for any Apple Pro Keyboard!

Clip onto Apple Pro Keyboard

### QDock

Provides two powered USB ports, two Geo serial ports, and one ADB port for your iBook

### 3-Port IEEE1394 Repeater Hub FX-RH-3

(6-Port also available)

### 4-Port Stackable USB Hub USB-HUB4BT

### iDock FireWire

Monitor swivel base designed for PC and iMac DV/ iMac DV Summer with USB and IEEE 1394 Controller

**CompuCable**  
Manufacturing Group

[www.compuCable.com](http://www.compuCable.com)

Check out our website for free literature  
1-800-344-6921

# USB 2.0 UPGRADE KITS!

Now, users can take advantage of the new USB 2.0 technology which offers a dramatic performance increase over standard USB. In fact, USB 2.0 runs at 480 Mbits/sec compared to USB 1.1 at a mere 12 Mbits/sec. That's 40 times faster! Another great advantage is that USB 2.0 is backwards compatible with your older USB peripherals, so you can continue to use them and your newer USB 2.0 devices simultaneously.



## OrangeUSB 2.0 Hi-Speed Products

- OrangeUSB 2.0 Hi-Speed PCI Board  
adds 4 external and 1 internal USB 2.0 port to your computer
- OrangeLink+ USB 2.0 Hi-Speed + FireWire  
adds 4 USB 2.0 ports and 3 FireWire ports to your computer
- OrangeUSB 2.0 Hi-Speed CardBus Card  
adds 4 USB 2.0 ports to your portable computer
- OrangeUSB 2.0 Hi-Speed Hub  
includes 5 ports for expanding your USB 2.0 system

Info: [www.orangemicro.com](http://www.orangemicro.com)  
Orders: [www.1394firestation.com](http://www.1394firestation.com)

**Orange Micro**  
inc.

Circle 61 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



# DVlator for ADC

"You don't have to buy a new G4 to drive the coolest display around."



DVlator allows the use of Apple's 15" or 22" flat-panels through industry standard DVI video. Not only does DVlator depart from the norm of only allowing one ADC display on the latest Macs, it also allows the use of multiple displays on ADC G4s.



## Dr. Bott LLC

**[www.drbott.com](http://www.drbott.com) • 877.611.2688 • 503.582.9944**

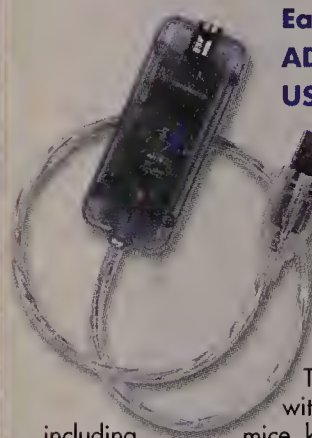
Dr. Bott LLC is a manufacturer and distributor of Macintosh peripherals. If your local reseller doesn't carry Dr. Bott Products, have them give us a call!

Circle 173 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



**iMate**

UNIVERSAL ADB TO USB ADAPTER



**Easily Connects Any ADB Device To USB- Equipped iMac or PC Computer**

The innovative iMate USB to ADB adapter allows users to easily connect their existing ADB peripherals to iMacs, Macs with USB cards, and PCs with USB.

The iMate is compatible with any ADB device

including mice, keyboards, trackballs, trackpads, hardware dongles, and AppleVision displays. The iMate is a simple and inexpensive solution for making the transition to USB as well as preserving your investment in ADB devices.

- One iMate can support multiple devices
- Activity LED
- Supports keyboard soft power on and off
- Successfully tested by Apple and major hardware manufacturers

**G4Port**

THE SERIAL SOLUTION

- Easy to install
- Economical
- Cost Effective

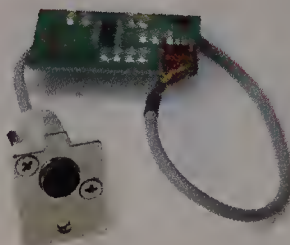
**Also available for G3's and Cube Macs**

The g4Port universal serial adapter is the perfect companion for your new G4 (AGP graphics) computer. Designed from the ground up with the G4 in mind it supports every serial device that works on your older Macs.

The g4Port replaces the internal modem for 100% serial compatibility and provides a great transition for people with existing serial equipment. (*Internal modem must be removed*)

**SUPPORTS:**

- LocalTalk Printing & File Sharing
- Midi Interfaces • Modems
- PDAs/Palm Pilots • Serial Printers

**iMic**

USB AUDIO INTERFACE

**Full USB Plug and Play Operation For Audio Playback and Recording**

The iMic is the ideal audio interface for Macs without audio input capabilities, like the iBooks and G4 Cubes. You can use it to attach virtually any audio device to your USB equipped Mac—microphones, headsets, stereos, turntables, music equipment and more. Designed for both professionals and hobbyists, the iMic provides superior audio input/output quality.



- USB audio input and output
- Supports up to 24 bit audio recording
- High signal to noise ratio (typical 95 dB)
- Supports mic level and line level signals
- Works with any Mac with USB ports
- Inexpensive

**GRIFFIN**  
TECHNOLOGY

**615.255.0990**

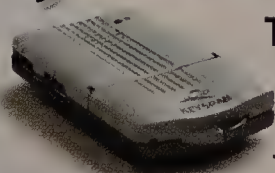
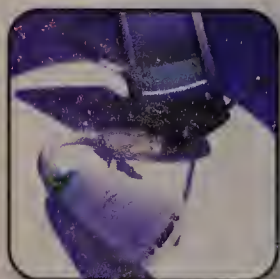
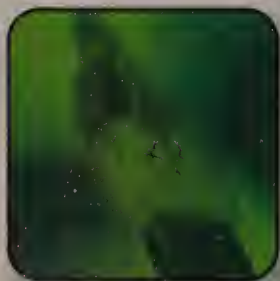
[info@griffintechology.com](mailto:info@griffintechology.com)

1619 Elm Hill Pike, Nashville, Tennessee 37210

[www.griffintechology.com](http://www.griffintechology.com)

# Our new USB hub is just 3/8" thin!

Perfect for your PowerBook



This amazing hub offers full desktop functionality in an incredibly thin case.

The hub has four 12 Mbps USB ports, supports both bus-powered and self-powered modes, & includes a built-in USB cable for connection to the PowerBook. Available in silver or black.

Upgrade your G3 or G4 to USB 2.0. See our website.



**Keyspan is #1 in USB Adapters!**

USB Twin Serial adapter, USB PDA adapter for PalmPilots, & USB Parallel adapter for Epson printers.

(510) 222-0131 [www.keyspan.com](http://www.keyspan.com)



**KEYSPAN**





See the Music.

Real-time Music & Visual Arts Software for MacOS

Download your free Onadime Player  
or Onadime Composer demo today!

[www.onadime.com](http://www.onadime.com)



# ONADIME COMPOSER

The Live Digital Medium

• live video  
• color shapes  
• real-time 3D  
• MIDI  
• fractals



[www.onadime.com](http://www.onadime.com)

## comfort by design

adjustable computer  
furniture with style

[biomorphdesk.com](http://biomorphdesk.com)



**biomorph**  
interactive desk

Biomorph reg. trademark of S. Barlow-Lawson ©2001 Ground Support Equipment (US) Ltd.



catalog 888 302-DESK

Circle 161 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

# Back Jack

Don't just back it up . . .  
BackJack it !

More than just another backup solution.  
We invite you to take a look at what we do,  
how we do it and why we continue  
to lead the way.

Online Backup Service for Macintosh®

[www.backjack.com](http://www.backjack.com)

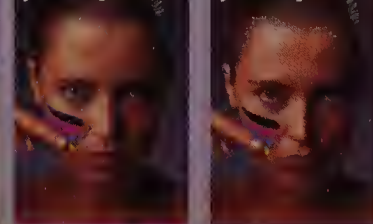
888 421 0220 - complete - cost effective - offsite - secure

## Ever wonder if your proof will match what comes off the press?

With PowerRIP 2000™ and your  
Epson or HP ink jet printer you  
no longer have to wonder.



PowerRIP 2000 makes  
your proof = your press



- Save time and money, make your own pre-press proofs
- Recognizes named spot colors, such as PANTONE, and selects the best CMYK match for printer, ink and paper
- Recompose separations to check your color traps
- Accepts custom ICC profiles
- Add PowerRIP PDF option and make Proofs or PDFs with one application
- Built-in network print server makes printer available to all on the network

**iProof**  
SYSTEMS™

Tel: 321-254-4401 Fax: 321-254-6899  
[www.iproofsystems.com](http://www.iproofsystems.com)





PUT AN ECLIPSE AT THE  
TOP OF YOUR WISH LIST.

ECLIPSE FROM BELLSTOR, the first simple high-performance storage solution. Featuring the high speed FireWire interface, the BellStor Eclipse is available in Hard Disk, Tape and CD-RW models.

- Data transfer rates up to 400 Mbps
- Simple Plug & Play installation
- Hot-Pluggable
- Auto-configuring
- No device ID's or termination

"...if you're craving a FireWire CD-RW drive, put this one at the top of your list."

BUZ ZOLLER  
*Mac Addict, July 2000*

BELLSTOR  
SIMPLIFYING STORAGE SOLUTIONS



[www.bellstor.com](http://www.bellstor.com) • (800) 800-1513



**Power Accessories for Mobile Computing**

**When in the Air or On the Road  
Keep Your PowerBook Powered  
& Your Battery Charged!**

**With Lind Auto/Air Power Adapters**



Rugged Lind adapters feature:  
Low input voltage & output short circuit protection  
Internal temperature limit - Automatic fault reset  
Nylon carrying case - 3 year warranty  
Durable aluminum housing

Adapters in stock now for G4s, G3s & iBooks!  
Only \$99.95

Order online at:  
[www.lindelectronics.com](http://www.lindelectronics.com)  
or Call 24hr/7days a week to order:  
#800-897-8994



# RACKMOUNT YOUR G4



**(or your G3)**

[mwd@marathoncomputer.com](mailto:mwd@marathoncomputer.com)  
[www.marathoncomputer.com](http://www.marathoncomputer.com)  
800 • 832 • 6326

Circle 164 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



## data recovery

www.mcrecovery.com

When you absolutely, positively  
have to get your data back...

- 24hr. Emergency Data Recovery
- Worldwide Services

**MICROCOM**  
20802 Plummer St. Chatsworth, CA 91311 • 818 718-1200  
**800 469-2549**

## EMERGENCY DATA RECOVERY

ActionFront - Data Recovery Labs

"The Data Emergency Specialists"™

- Free Evaluations and Guaranteed Results.
- Specializing in Top Priority, High-End recoveries from network servers, multi-drive systems, (RAID, optical jukeboxes).
- Mac, SQL, Jaz, Zip, DLT & DAT tapes.
- Over 10 years of successful recoveries.
- Authorized by hard drive manufacturers.

**ACTION FRONT**  
DATA RECOVERY LABS

Toronto • Atlanta • Buffalo • Santa Clara • Tokyo  
www.ActionFront.com

**1-800-563-1167**

## PROFESSIONAL DATA RECOVERY SERVICE

### No Recovery. No Fee.™

With one of the best success rates in the business, we take every step necessary to get your lost data back. In the remote chance we can't recover the data, there is no cost to you.\* As one of the original data recovery companies, Total Recall has the engineering and expertise required to recover your lost data, and we've served over 80,000 customers worldwide since 1989. Total Recall... We Live Up To Our Name!

\*See web-site for complete details. ©2000 TRPS, LLC

Visit our new website:

- Instant on-line quotes
- Real-time job tracking
- On-line customer service
- Recovery Software

**96%**

RECOVERY  
SUCCESS RATE!

ALL ROTATING MEDIA  
MOST OPERATING SYSTEMS

**TOTAL RECALL**®  
THE DATA RECOVERY COMPANY™

2462 Waynoka Road • Colorado Springs, CO 80915  
(719) 380-1616 • Fax (719) 380-7022

**800.743.0594**

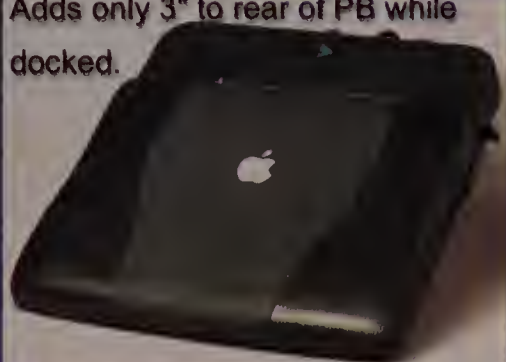
www.totalrecall.com

Circle 199 on card or go to www.macworld.com/getinfo

## PowerBook Users!

Convert your PowerBook  
to a desktop system (or  
back) in seconds.

Adds only 3" to rear of PB while  
docked.



**BookEndz**  
Docking Stations

**Only \$229.95 !**

Eliminates cable confusion and damage to connectors



Supports all rear ports

**www.photo-control.com**

BookEndz

Division of PHOTO CONTROL CORPORATION

800-787-8078 or 763-537-3601

www.photo-control.com email: beinfo@photo-control.com

## Data Recovery in hours.

- Over 10 years of experience with clients worldwide including Apple, NASA, HP, and FedEx.
- We've recovered more than half-a-million megabytes of Mac Data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.

415-495-5556 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY  
381 Clementina Street • San Francisco, California 94103



**LAZARUS**  
DATA RECOVERY

Working at the speed of business.

**800-341-DATA**

Circle 217 on card or go to www.macworld.com/getinfo

## Call Us Toll Free 800-345-4220

Broadest Selection of Bar Code Products in the Industry

- Technically superior products direct from the manufacturer
- Toll free technical and pre-sale support
- 24-hour turnaround on repairs
- Free UPS Blue shipping in U.S.
- 30-day money back guarantee

- Portable & non-portable Batch Readers
- Cordless interactive R/F Terminals
- Wand, Laser, CCD, Magstripe or Slot Badge
- PostScript bar code fonts

or visit our website at

**www.BarCodeHQ.com**  
for a complete catalog and bar code primer

**USD**

Call For  
Free Catalog  
& Bar Code  
Primer

Worthington Data Solutions  
is now...

Phone: 831-458-9938 • Fax: 831-458-9964

**WORTH**  
data





Data Recovery  
Web Hosting  
Bar Code  
Training

## SERVICES : showcase

### DATA RECOVERY: 800-440-1904

#### 7 good reasons to choose DriveSavers:



1. Fastest, most successful data recovery service available.
2. Recommended and certified by all drive companies to open the drive and maintain the warranty.
3. Advanced, proprietary recovery techniques.
4. 24-hour, onsite, and weekend service available.
5. Retrieve recovered data instantly over secured, high-speed internet lines with DATAEXPRESS™.
6. Featured in MacWorld, Mac Addict, MacWeek, Popular Mechanics; also by CNN, BBC, Forbes, and many others.
7. Federal and State Contracts.



Since 1985  
[www.drivesavers.com](http://www.drivesavers.com)

**"We Can Save It!"**

**Visit DriveSavers @ MacWorld-New York #2402**

©2000 DRIVESAVERS, INC. 400 BEL MARIN KEYS BLVD., NOVATO, CA 94949 INTL: 415-382-2000 FAX: 415-883-0780

Circle 211 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

### CREATE, PRINT & READ BAR CODES

with new Bar Code  
Fonts from **ITSCO!**

- \* All popular bar codes
- \* Individual or deluxe packages
- \* User-friendly
- \* Both TrueType & PostScript
- \* Designed in the Bear Rock tradition!

**CALL 1-800-228-9487**  
or visit us at [www.itsco.net](http://www.itsco.net)



**ITSCO**  
AUTO ID PRODUCTS  
Where people make the difference

Ask about our full line of USB-compatible  
bar code scanners, printers, and accessories!

**USB**

Circle 221 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

Want to Print  
Bar Code  
Labels?

**maclabel.com**  
LABEL PRINTERS  
USB  
Ethernet  
Appletalk  
HP PCL3, LBB  
IntelliTech  
INTERNATIONAL  
PH: 800 694-3054  
iii@intellibar.com

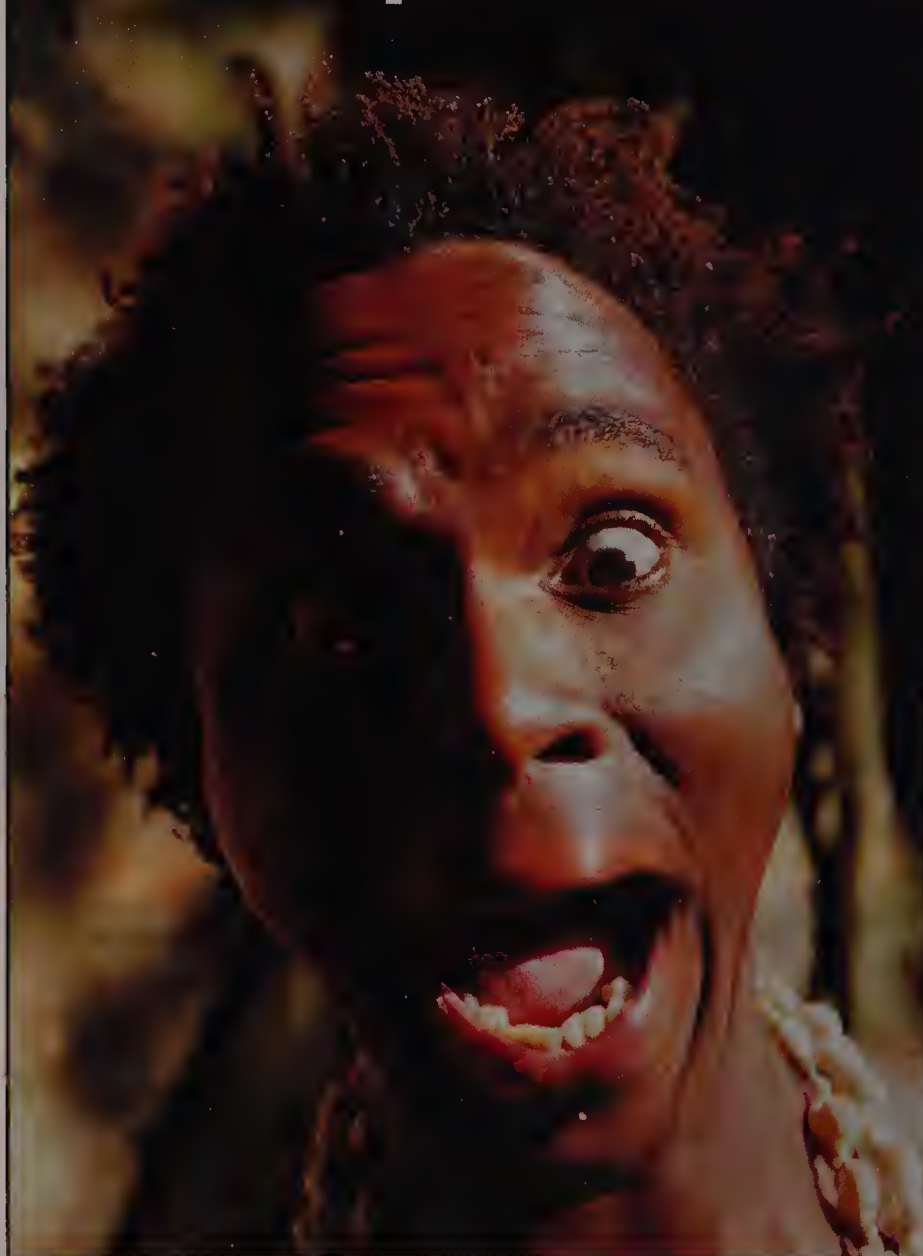
**For computer &  
software training**

**MacAcademy**

Visit us at  
[www.macacademy.com](http://www.macacademy.com)  
**1.800.527.1914**

175 on card or [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

## A reliable web host. Surprised?



In today's wired world, all business is e-business. That's why you need a reliable and experienced web host to support your business online.

We've been hosting web sites since nearly the beginning of the Web. And as a large hosting provider, we ensure the security and technology you expect, yet we focus on providing personalized customer care.

Host with us. Your business matters.

**NetNation**

1 888 277 0000

[www.netnation.com/mw](http://www.netnation.com/mw)

© 2001 NetNation Communications, Inc. All rights reserved. NetNation and the NetNation logo is a registered trademark of NetNation Communications, Inc.



# Go Ahead. Host Your Web Site With Another Company. It's Your Money.

## Making Money On The Web Begins By Not Wasting Money On The Web.

Unless you've got money to burn, Interland is the way to go. Our complete solutions include everything from shared hosting to dedicated and high-availability hosting to Web site design, all at an unbeatable value.

That's why we're rated #1 by *PC Magazine* and *Windows NT Magazine*. So whether you're already on the Web or ready to get started, call us to learn how we can make the Web work for you today, and grow with you well into the future.

### The Interland Standard

- Unconditional 30-day, money-back guarantee
- E-mail accounts for your Web site
- 150 MB starting at \$19.95
- 24/7 toll-free support
- 99.9% uptime

Call Today Toll Free  
**877.472.7189**  
[www.interland.com](http://www.interland.com)

NASDAQ: ILND

**interland**  
We make the Web work for you.™



December 1, 1999 September, 1999

© Copyright 2000 Interland, Inc. All rights reserved.

Circle 11 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)



## 1000 Full Color BizCards - \$60!



Preferred by over  
8,000 professionals!

- Superthick Stock
- Glossy UV
- No film charge
- Friendly Service
- Free Samples

**1000 Color  
Postcards  
\$145**  
black imprint on back  
**FREE!**

Postcard Press  
1-800-957-5787  
www.postcardpress.com

## print&mail full color postcards

Use **Pro Designer™** at  
**modernpostcard.com**  
to easily FTP ready-to-print  
postcard files or send them  
in on a disk.

Plus, our in-house mailing  
services can save you time,  
money & hassles.

**\$95 for 500** postcards

Modern Postcard<sup>®</sup>

**800-959-8365**  
modernpostcard.com

207 on card or www.macworld.com/getinfo

## CALL SILICON VALLEY CD

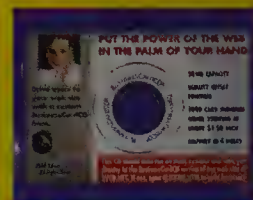
FOR CUSTOM SILKSCREENED BLANK CD-R DISCS, AND...



CD/DVD MANUFACTURING  
AND PACKAGING



CD-R DUPLICATION WITH  
CUSTOM PACKAGING



BusinessCardCD™  
OPTICAL BUSINESS CARDS

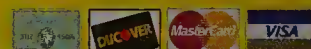
Why use Silicon Valley CD? Listen to a satisfied customer:

*I wanted to take a moment out of my day to thank you for the excellent service...you have put us a day ahead of schedule and it will make a world of difference.*

Dennis Purdy, Purchasing Manager  
Ricoh Silicon Valley, Inc.  
August 30, 2000

**CALL TODAY!**  
**800-255-4020**  
**WWW.SVCD.NET**

**FAST** Turnarounds  
**EASY** Ordering



ORDER BLANK CD-R DISCS AND  
SUPPLIES IN OUR ONLINE STORE!



SILICON VALLEY  
CD since 1992

990 Richard Avenue #103, Santa Clara, CA 95050 Tel: 408-486-0800 Fax: 408-486-0809

## BIG POSTERS HUGE DISCOUNTS

HIGHEST QUALITY PRINTS AT THE BEST VALUE AROUND • STATE OF THE ART EQUIPMENT • UP TO 60% OFF

24" x 36" Full color print on 7 mil high or low gloss paper <b>\$25</b> NO MINIMUMS VOLUME DISCOUNTS	36" x 48" Full color print on 7 mil high or low gloss paper <b>\$50</b> NO MINIMUMS VOLUME DISCOUNTS	48" x 72" Full color print on 7 mil high or low gloss paper <b>\$125</b> NO MINIMUMS VOLUME DISCOUNTS
---	---	--

FOR MORE INFO & PRICING VISIT OUR WEBSITE  
**www.BIGPOSTERS.com**  
CREATIVE JUICES PRINTING & GRAPHICS INC.  
(In New York) Tel: 516-520-4533 Fax: 516-520-4534 • 14 Wolcott Rd., Levittown, NY 11756  
**1-888-880-HUGE**

177 on card or www.macworld.com/getinfo

## Digital Imaging

Slides & Negatives **\$3.75**  
4x5 Transparencies/Negs **\$30**  
Large Posters & Displays **\$45**  
Scanning: Hi & Lo Res  
Kodak Photo-CD Scans  
Short Run Color Printing

Show & Tell 39 W 38th St., NY, NY 10018

**www.show-tell.net**

212 840-2912 212-840-7953 (fax)  
jobs@aviltld.com • posters@aviltld.com

1219 on card or www.macworld.com/getinfo

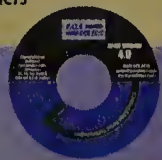
## POINT OF SALE • INVENTORY CONTROL

Software & Hardware for:



- Retail/Wholesale
- Mail Order
- Internet Commerce
- Rentals/Service/Repair
- Kiosk Development
- FileMaker/4D Tools
- Credit Card Auth. SW
- Full USB Support

Fully Integrated Accounting  
Multi-Site • Cross Platform • Receipt  
Printers • Barcode Readers/Printers • Cash  
Drawers • Mag Stripe • Ribbons • Paper •  
Labels • Developer Integration Support  
New Visor Laser Scanners  
Touch Screens



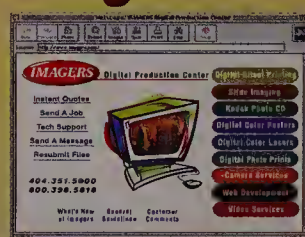
**www.posdirect.com**

(800) 622-7570 • sales@posdirect.com  
(618) 985-8237 vox • (618) 985-3014 fax

New Free CD Rom  
v.4.0 Now Shipping

Circle 165 on card or go to www.macworld.com/getinfo

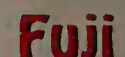
## Digital Solutions!



- INSTANT Online Quotes
- OVERNIGHT Services
- Submit Jobs Online
- Online Tech Help
- A Price You'll Like!

Send PC/Mac files by FTP or Priority Air Express to Imagers and for most output services, your finished work is in your hands the very next morning.

- Digital Short-Run Printing
- High-Res Film Scanning
- Digital Posters/Banners
- Fuji Digital Photo Prints
- Digital Color Lasers
- Slides & Overheads
- New Media Services



Hours...  
Monday to Friday  
8:00am to 8:00pm  
East Coast Time

We guarantee our work!  
1575 Northside Dr. Ste. 490 Atlanta 30318

**www.imagers.com**

**800.398.5816/404.351.5800**

Circle 155 on card or go to www.macworld.com/getinfo



## COLOR FROM YOUR FILES FEATURING 300 LINE SCREEN WATERLESS OFFSET PRINTING

**1000  
FULL COLOR BUSINESS CARDS  
\$100**

Printed from your computer files  
on 10 pt CIS Kromekote with  
FREE aqueous coating.



Printed from your computer files  
on 10 pt CIS Kromekote with  
FREE aqueous coating.

**1000  
FULL COLOR POST CARDS  
\$149**

**BUSINESS CARDS  
POSTCARDS  
CD INSERTS  
CD TRAY LINERS  
BROCHURES  
BOOKLETS  
NEWSLETTERS  
POSTERS**

**WHY COPYCRAFT?**  
Waterless Printing  
300 LPI Resolution  
Technical Expertise  
Attention to Detail  
Laser-Fast Quotes  
Award-Winning Art  
Economical Pricing  
Service, Service,  
**SERVICE!**

**TABLE TENTS  
MENUS  
LETTERHEAD  
ENVELOPES  
FLYERS  
CALENDARS  
FOLDERS  
STICKERS**

**SPECIAL!!!**  
1000 PRESENTATION FOLDERS  
9" x 12" folders with 4" pockets and  
Business Card slits  
**\$1499**  
suggested retail: \$2,299

Presentation folders are printed 4-color process  
on one side from your computer files on 10 pt.  
CIS Kromekote with FREE Aqueous Coating.

Visit [www.copycraft.com](http://www.copycraft.com) for our MONTHLY SPECIALS, or order a catalog at [request@copycraft.com](mailto:request@copycraft.com)

**copycraft**

PRINTERS, INC.

4411 Grand Street • Lubbock, TX 79424 • FAX 806 798 8197

**1.800.794.5594**

Se habla Español • Professional Graphic Art Available

Circle 223 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

**ABE'S**  
SINCE 1979! CAMERAS AND ELECTRONICS OF MAINE

**OPEN HOURS**  
Mon.-Thurs. 9:30AM-10:30PM  
Friday 9:30AM-5:30PM  
Saturday Closed  
Sunday 10:00AM-7:00PM

**ALL MAJOR CREDIT  
CARDS ACCEPTED**  
Orders and  
inquiries can now be  
E-Mailed to us at:  
[info@abesofmaine.com](mailto:info@abesofmaine.com)

**1-800-231-2237**

**[www.abesofmaine.com](http://www.abesofmaine.com)**

### SONY MAVICA MVC-FD75

- 2.5" LCD Screen
- 10X Optical Zoom
- Records on Floppy Disk

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



MVC-FD87 .....CALL

### SONY MAVICA MVC-FD92

- Clip Motion Animation
- Memory Stick Direct
- 8X Optical Zoom

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



MVC-FD97 .....CALL

### SONY DSC-P50

- 2.1 Megapixel Camera
- 3X Optical Zoom
- 6X Digital Zoom
- 1.5" LCD Screen

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



### SONY DSC-S75

- 3.3 Megapixel Camera
- 3X Optical Zoom
- 6X Digital Zoom
- 1.8" LCD Screen

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



### SONY DSC-F505V

- 1600x1200 Resolution
- 3.3 MegaPixel Camera
- 2" LCD Screen

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



MVC-CD1000 .....CALL

### KODAK DC-4800

- 3.1 Megapixel Zoom
- 3X Optical Zoom
- 2X Digital Zoom
- 2160X1440 Resolution

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



DC-3400 .....\$329.99 DC-3800 .....\$329.99

### NIKON COOLPIX 990

- 3.34 Mega Pixel
- 2048x1536 Resolution
- 3X Optical Zoom
- 1.8" LCD Monitor

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)

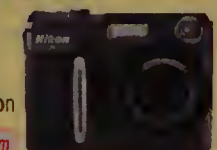


COOLPIX 950 .....CALL

### NIKON COOLPIX 880

- 3.34 Megapixel
- 2.5X Optical Zoom
- 1.8" LCD Screen
- 2048x1536 Resolution

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



COOLPIX 800 .....CALL

### OLYMPUS D490Z

- 2.11 Mega Pixel Resolution
- QuickTime™ Movie Mode
- 3X Optical Zoom
- 2X Digital Zoom

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



### Olympus Digital Cameras

D-360L .....CALL  
D-460Z .....CALL  
C-3000 .....CALL  
C-3040 .....CALL  
C-3030 .....CALL  
C-2100 .....CALL  
C-2040 .....CALL  
E-10 SLR .....CALL

### CANON POWERSHOT G1

- Memory options to 340MB
- 3.3 Megapixel Camera
- 3X Optical Zoom
- 12 Shooting Modes

**\$799<sup>99</sup>**



### CANON POWERSHOT S-300

- 2.1 Megapixel Camera
- 3X Optical Zoom
- Smallest 3X Zoom Camera

Call or Visit  
[www.abesofmaine.com](http://www.abesofmaine.com)



### CANON POWERSHOT S-100 DIGITAL ELPH

- 2.1 Megapixel Camera
- 2X Optical Zoom
- Smallest 2 Megapixel

**\$419<sup>99</sup>**



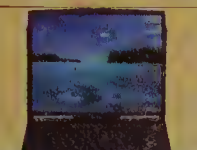
### CANON POWERSHOT S-20

- 3.3 Megapixel Camera
- 2X Optical Zoom
- 1.8" LCD Screen

**\$499<sup>99</sup>**



We Carry A Full Line of Laptops,  
Accessories, and PDA Organizers.  
Please Call for Information or  
Log on to [www.abesofmaine.com](http://www.abesofmaine.com)





## THE CAMERA ZONE

visit us online at [www.camerazone.com](http://www.camerazone.com)

WE ACCEPT ALL SCHOOL, and GOVERNMENT BIDS & POs!!

24 HOUR FAX: 718-491-4418

USA TOLL FREE: 888-596-4716

Local: 718-491-4408

140 58th Street Suite 4E

Brooklyn NY 11220

**Company Hours**

Sunday 10am - 6:00 pm

Monday-Thursday 9am-8pm

Friday 9am-5:00pm

Saturday Closed

**CALL TOLL FREE 1-888-596-4716**

**LOWEST PRICES AT [www.camerazone.com](http://www.camerazone.com)**

**DIGITAL CAMERAS**

**DIGITAL VIDEO**

**PRINTERS**

**OLYMPUS**

Comes with USB Cable Interface

**New!**

**C-3040**



- \* F1.8 Aspherical 3X Zoom
- \* 3.34 Million Pixel CCD
- \* 32 Mb Smart Media
- \* One Touch White Balance
- \* Multi Spot Metering

**C-2040**



- \* 2.1 Million Pixel CCD
- \* One Touch White Balance
- \* Aspherical 3X Zoom (40-120mm)
- \* Multi Spot Metering
- \* 15 Recording Modes
- \* Aperture, Shutter Priority & Manual Modes

**C-2100UZ**



- \* 10x Image Stabilized Optical
- \* 2.7x Digital Zoom
- \* 3 Frame Per Second Burst Mode
- \* 5 Program Modes
- \* Spot & Multi Spot Metering

**E-10**



- \* 1.8" Color LCD
- \* Holds SmartMedia and Compact Flash
- \* 35-140mm Lens
- \* Fully Multi-coated glass optics

C-3000 .....Call D490 .....Call  
C-2500L .....Call D-460 .....Call  
E100RS .....Call D360 .....Call  
C-211 .....Call

**Nikon**

Comes with USB Cable Interface

**Coolpix 990**



- \* Nikons New 3.34Megapixel Entry Featuring a Superb quality
- \* 2048 X 1536 resolution
- \* 4X Zoom
- \* Exclusive 256 Elements Matrix Metering with Outstanding Exposure

**Coolpix 880**



- \* 3.34 Megapixel CCD w/true image resolution of 2048x1536 for easy cropping
- \* Incredible print quality

New D1H/D1X Pro Digital SLR.....Call  
Coolpix 950 .....Call

**Kodak**

Comes with USB Cable Interface

**DC-5000**



- \* 2.1 Megapixel resolution
- \* 1760 x 1168 resolution
- \* 2X optical zoom lets you capture important details
- \* 1.8" TFT color LCD to give you excellent detail for your pictures

**DC-3400**



- \* 2.3 Mega Pixel CCD Resolution
- \* 1760x1168 High Image Resolution
- \* Real Image Optical Viewfinder
- \* 3X Digital Zoom
- \* 2X Optical Zoom
- \* TTL AE Autofocus

DC-215 .....In Stock  
DC-240 .....In Stock  
DC-220 .....In Stock  
DC-290 .....In Stock

**SONY**

Comes with USB Cable Interface

**MVC-CD1000**



- \* 1600 x 1200 resolution
- \* 2.5" TFT LCD
- \* 10X Optical Zoom Lens
- \* New Optical Super Steady Shot System

**DSC-P1**



- \* 3.3 Megapixel
- \* 3x Optical/6X Digital Zoom Lens
- \* 1.5" LCD Screen
- \* Underwater Housing
- \* Exclusive new GIF animation feature

**DSC-S75**



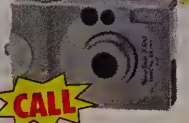
- \* 3x Optical Zoom
- \* 3.34 Million Pixel CCD
- \* 8MB Memory Stick
- \* HQ Movie Mode\* 2" Color Led
- \* Spot Metering \* Variable ISO

Mavica FD-75 .....Call Mavica FD-92 .....Call  
Mavica FD-87 .....Call Mavica FD-97 .....Call

**Canon**

Comes with USB Cable Interface

**Powershot S-100 Zoom Digital Elph**



- \* 1600x1200 resolution
- \* 1.8" TFT LCD display
- \* 2X/4X digital zoom
- \* Built-in flash
- \* Built-in high-speed USB interface

**Powershot G-1**



- \* 1600x1200 resolution
- \* 1.8" TFT LCD display
- \* 2X/4X digital zoom
- \* Built-in flash
- \* Built-in high-speed USB interface

**EOS D-30**



- \* 3.11 Million Pixel Resolution SLR
- \* 3 Frames Per Second
- \* Histogram Displayed w/Each Shot
- \* 13 Custom Function \* Easy Controls
- \* High Quality Still Images

Powershot S300 .....Call  
Powershot A10 .....Call  
Powershot A20 .....Call

**FUJIFILM**

Comes with USB Cable Interface

**FINE PIX 4900**



- \* 2.4 Mega Pixel Super CD
- \* 6x Aspherical Zoom Lens
- \* 1/4 to 1/2000 sec Shutter Speed
- \* TTL 64 Zone Metering

**FINE PIX 6800**



- \* 3.3 Million Mega Pixel
- \* 5 Frames Per Second
- \* USB Hot Sync
- \* Video Conferencing

**FINE PIX 40i**



- \* Ultra compact metal body
- \* 4.3 million pixel
- \* Plays MP3 Audio
- \* USB Port
- \* Available in Metallic Silver or Blue

Finepix 2300 .....Call  
Finepix 2400 .....Call  
Finepix 4800 .....Call

**SONY**

**DCR VX-2000**



- \* Sanyo's Newest A most Compact DV Camcorder
- \* 2 1/2" Touch Screen Precision Color LCD Monitor
- \* Precision Color Viewfinder (200,000 pixels)
- \* 12 or 16 Bit PCM Stereo w/Audio Dub Capability
- \* Carl Zeiss Vario Sonnar lens
- \* 10x optical/120x digital zoom
- \* Steadyshot Image Stabilizer

**DCR PC-110**



- \* Digital Video Recording
- \* Mega-Pixel CCD
- \* Carl Zeiss Vario-Sonnar lens
- \* 10x Optical/120x Precision Digital zoom
- \* 2.5" Precision SwivelScreen LCD Display (200k Pixels)
- \* Viewfinder (180k pixels)
- \* Precision Color Viewfinder (180,000 Pixels)

**DCR PC-5**



- \* Palm-sized Handycam Camcorder
- \* 2.5" SwivelScreen LCD Display
- \* Super SteadyShot Picture Stabilization
- \* AccuPower Battery System
- \* Stereo Sound with Audio Dub Capability
- \* 10x Optical/120x Digital Zoom
- \* Carl Zeiss Optics

**DCR TRV-30/17**



- \* Dcr Trv 330: 1.5 Mega Pixel Imager
- \* 1360x1020 Digital Still Images
- \* Intelligent Pop Up Flash
- \* Dcr Trv 17: 10x Optical/120x Digital Zoom w/steadyshot stabilization
- \* Analog Recording Capability \* USB Connection
- \* Laserlink Wireless Connection

**DCR TRV-830/730/530**



- \* 25x optical And 450x digital zoom lenses. Hyper precision CCD with 460,000 produces sharp pictures at full zoom.
- \* Photo mode captures a still image with seven seconds of audio narration
- \* Dcr Trv 530: Has a large 3.5 swivel LCD color display
- \* Dcr Trv 730: Has a 4" LCD display. Up to 14 hours recording time with optional NP-F960 battery.
- \* Dcr Trv 830: Same as 730. Includes dye sub printer.

**Canon**

**XL-1**

- \* 3-CCD DV Camcorder with Interchangeable Lens Mount System
- \* 16X Optical Zoom w/ SuperRange Image Stabilizer
- \* Normal Movie mode
- \* Hi-resolution stop action movie & Digital Still Modes

**GL-1**

- \* Professional Quality L-Series Fluorite Lens For Remarkable Images
- \* 20x Zoom Lens with 100x Digital Zoom Provides Supreme Clarity
- \* 3 CCD Image Sensors with Pixel Shift Achieve Outstanding Detail
- \* Optical Image Stabilization Corrects Camera Shake Instantly
- \* 3 Shooting Modes Accommodate any Recording Need

**Elura 2MC**

- \* 10x Optical/40x Digital Zoom Lens
- \* Optical Image Stabilization
- \* 2.5" Color LCD View Screen
- \* Color Viewfinder \* PCM Stereo
- \* Utilizes Multimedia Cards for Digital Still Pictures

**ZR-20**

- \* 10x Optical Zoom \* 200x Digital Zoom \* 2.5" LCD Screen \* Automatic and Manual Modes \* Holds 700 Still Images on Tape \* Analog Video Input

Optura Pi .....Call ZR-30 MC .....Call  
ZR-25MC .....Call

**JVC**

**GRDVL-9800U**

- \* 4" Color LCD monitor
- \* 500 lines of horizontal & 400 lines of vertical resolution
- \* 10X Optical Hyper Zoom
- \* 200x Super Frame Digital Zoom

**GRDV-M90/80**

- \* Multimedia Interface \* 10x Optical Hyper Zoom
- \* 2.5" High Resolution LCD monitor \* 25x Digital Zoom
- \* High resolution color viewfinder
- \* Digital recording for superior picture & sound

**GR-DVL-M300/500/505/805**

**EPSON**

**Stylus Photo 2000P**



- \* 1440x720 DPI professional photo printer. Make prints to 13"x19" that last up to 200 years with Epson papers! Includes roll paper holder. Panoramas to 44" long

\$100 Rebate Available  
Call for Information

**Stylus Photo 1280**

- \* 2880x720 DPI premiere photo printer. Quick drying inks for stunning prints to 13"x19". Border free printing. 6 color inks and panoramas up to 44". 4 picoliter dot size. Includes Qbeo Photo Genetics & Epson Film Factory

Stylus Photo 890 .....Call

**OLYMPUS**

**P-330N**



**P-400**



Canon BJCB0 .....Call Canon CB300 .....Call

**SCANNERS**

**Nikon**

**New!**

**Coolscan 4000ED**

- \* 4000 DPI film scanner with fast 38 second scan time!
- \* 4.2 Dynamic range highest of any desktop scanner
- \* Multi Scan feature produces drum scanner quality
- \* Firewire IEEE 1394 interface. Color management system. \* Digital ICE, ROC, and GEM image enhancement technology. \* Uses RGB, CMYK and Lab Color spaces. Includes full version of Altamira Genuine Fractals software

Coolscan IV ED .....Call Coolscan 8000 ED .....Call

**MINOLTA**

**Dimage Scan Elite**

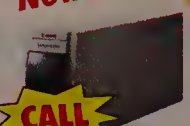
- \* Scans both 35mm sleeves and mounted, positive and negative films in color and black & white
- \* Optional Aps adapter is available
- \* 2,820 dpi optical resolution
- \* 3.6 wide dynamic range
- \* 12-bit Ad Conversion producing 36-bit color
- \* Digital ICE correction Enhance Adobe Photoshop LE included \* Available for Mac and Windows

Scan Dual II .....Call Scan Multi II .....Call

**Canon**

**New!**

**Canoscan FS 4000**



- \* Now affordable 4000 DPI film scanner. \* Uses Xenon lamp light source \* USB and SCSI interfaces. \* Creates 42 bit scans for 35mm and APS film. \* Canon "FARE" automatic dust and scratch removal. \* Fast 48 second scan time and 3.4 dynamic range. \* Includes Adobe Photoshop LE

Canoscan 2710 .....Call

All merchandise is brand new & carries a Full USA or International Warranty. Our 14-Day Satisfaction Guarantee allows for exchanges on products or returns for credit. All returns for credit are subject to a minimum 10% restocking fee. 20% restocking fee for special orders. Shipping & Handling charges are non-refundable. All returns must be returned in original mint condition. Not responsible for typographical errors. \* Indicates price after rebate.

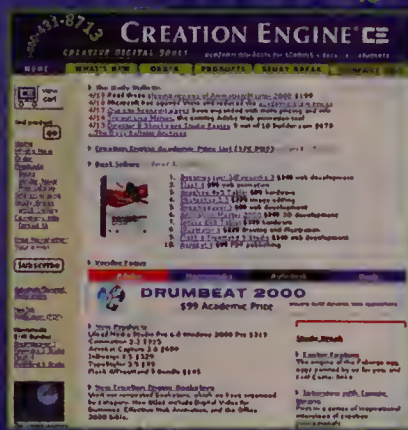


## ACADEMIC DISCOUNTS on CREATIVE DIGITAL TOOLS

www.creationengine.com  
800.431.8713

explore our web site!

product info  
academic prices  
online ordering  
reviews  
tutorials  
art gallery  
quote builder  
site licensing prices



Students, faculty, and schools can save up to 70% on the hottest creative software from over ninety companies including Adobe, Macromedia, Discreet, Newtek, and Hash.



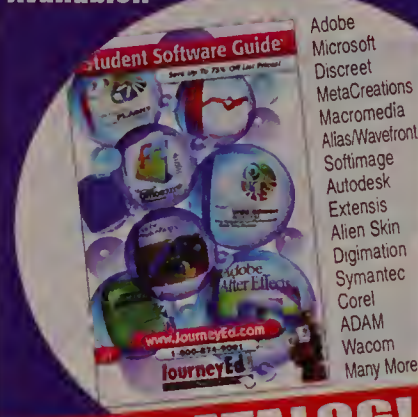
www.madaboutmac.com  
Macintosh resources for teachers and students!

CREATION ENGINE, LLC

## STUDENTS

Save up to 75% OFF  
popular software!

Thousand Of Titles  
Available!!



FREE CATALOG!  
Serving Students and Schools Since 1990

1-800-874-9001

www.JourneyEd.com

JourneyEd.com  
Education Marketing

Offer for U.S. & Canadian degree-seeking students only.  
Proof of student status required with order.

174 on card or www.macworld.com/getinfo

www.MAC-PRO.com  
Systems & Software

Buy • Sell • Upgrade • Repair • New • Used

We have It All  
In Stock!

• iMac, G3, G4  
• PowerBooks



Everything Mac!

Any Ad is a Mac Pro Ad

800-525-3888

sales@mac-pro.com Fax 408-369-1205

192 on card or www.macworld.com/getinfo

Mac POWER

Sales & Service, Inc.

BUY • SELL • TRADE

UPGRADE • REPAIR

New • Used • Refurbished

• Powerbooks • Monitors

• PowerMacs • Printers

• Performas • Peripherals

• Quadras • Ram

• MacII-LC • Parts

www.macpowerinc.com

888-275-POWER

Fax: 408-448-6132

San Jose, California, 95123

## ACADEMIC DISCOUNTS

Great Savings for...  
Students, Teachers  
and Schools!



MAGWORLD Special

NEW Amorphium Pro \$139

This new version from Electric Image now creates 3D graphics in the .SWF format, made popular by Macromedia's Flash!

Nemetschek's Vectorworks 9  
The latest CAD software at an unbelievable student price! **\$82**

Macromedia Web Design Studio  
Dreamweaver 4, Fireworks 4, Flash 5, and Freehand 10. **\$239**

Norton Systemworks  
Norton AntiVirus, Norton Utilities, Retrospect Express & Spring Cleaning **\$78**

NEW

All Adobe Titles	Call!	EI Universe 3.0	\$69	All Microsoft Titles	Call!
Boris FX 5	\$309	Filemaker Pro 5	\$148	Norton Utilities	\$59
Bryce 4	\$139	Fireworks 4	\$98	Painter 6	\$199
Coda Finale 2001	\$199	Flash 5	\$98	Poser 4	\$119
Director 8.5	\$329	Flash + Freehand	\$139	Sibelius	\$229
Dreamweaver 4	\$98	Imagene Hip Zip	\$275	TechTool Pro 3	\$79
Dreamweaver 4 +		Lightwave 6.5	\$895	Wacom 6x8 Tablet	\$284
Fireworks 4 Studio	\$139	MacAcademy Titles	\$32	webSavant	\$119
EyeCandy 4000	\$69	Mathematica 4.1	\$136		

(PC titles available!)

Visit us online for more savings, specials, bundles and 24hr. ordering!

CALL FOR YOUR FREE CATALOG

1-800-333-8571 FAX IDS & POS TO 512-450-0263



www.AcademicSuperstore.com

Circle 180 on card or go to www.macworld.com/getinfo

## Savings for Students & Teachers

FREE CATALOG!

Save on over 5,000 Titles including Microsoft & Adobe!!

Web Design Studio

Includes: Dreamweaver 4.0  
Flash 5.0  
Fireworks 4.0  
Freehand 10 **\$249**

Premiere Professional Screenwriting Software **\$149**

FileMaker Pro 5 **\$159**

Flash 5.0 **\$99**

Professional Web Animation Software **\$99**

Software Showcase Inc.  
1775 Rt 34 South D#12  
Farmingdale, NJ 07727  
Phone # (732) 556-0400  
Fax# (732) 556-0408  
info@softwareshowcase.com

Up to 80% Off

We will beat any advertised price!!

Coda Finale 2001.....	\$249
CodeWarrior Pro R6.....	\$119
Dramatica Pro 4.0.....	\$119
Dreamweaver 4.0.....	\$99
Dreamweaver Ultradev.....	\$149
EyeCandy 4000.....	\$79
Freehand 10 Flash 5 Studio..	\$119
Freehand 10.....	\$99
Genuine Fractals 2.0.....	\$129
Hollywood Screenwriter 3....	\$49
HomeStudio 9.0.....	\$69
Lightwave 3D 6.5.....	\$889
Mathematica 4.1 Student....	\$139
Mask Pro 2.0.....	\$169
Poser 4.0.3.....	\$125
Screenwriter 2000.....	\$119
Sharpener Pro.....	\$229
TechTool Pro.....	\$85
Ulead Video Studio 5.....	\$69
Wacom 4x5 Graphire Tablet	\$99

(800)699-1836

Visit our WebSite for \$10 Off online orders.

www.softwareshowcase.com

Circle 168 on card or go to www.macworld.com/getinfo





# MAC OF ALL TRADES®

Visit Our Web Site...

## www.macofalltrades.com

800.304.4639

These are typical used and refurbished items we buy and sell daily...



Direct: 404.355.5144

500 Bishop Street, Suite E-3 Atlanta, GA 30318

email: macofalltrades@macofalltrades.com

Fax: 404.355.5461

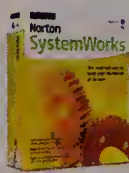


### Mac-Res-Q®

sales@macresq.com

(925) 689-9488 • (925) 689-9487 fax

### SOFTWARE BLOWOUT!



#### Norton SystemWorks

Norton Utilities 6, Norton AntiVirus 7  
Spring Cleaning, Retrospect Express**NEW \$79<sup>99</sup>**

(only \$39.99 after \$50 mail-in rebate!)


**128mb PC100 DIMM**  
for G4, G3, iMac 350-400
**NEW \$59<sup>99</sup>**

All items are refurbished unless noted as new. Pricing &amp; availability subject to change. 15% restocking fee on functional returns. No returns after 30 days.



#### Mac OS 9

Retail Box **\$69<sup>99</sup>**10-User Pk **\$399<sup>99</sup>**

#### AppleWorks 6

Retail Box **\$49<sup>99</sup>**

#### AppleShare IP

6.3 Retail Bx **\$299<sup>99</sup>**6.3 Upgrade **\$149<sup>99</sup>**

#### PowerMac G3/400 B&W

**\$1099<sup>99</sup>**

#### PowerMac 7500/100

24/500/CD/15" Bundle

**\$299<sup>99</sup>**

#### PowerMac 5200/75

16/500/CD/15"

**\$99<sup>99</sup>**

#### AppleVision 720 17" MS

**\$199<sup>99</sup>**

#### LaCie 18gb Ext SCSI HD

**\$219<sup>99</sup>**

#### Sony 12x Int SCSI CD-ROM

**NEW \$49<sup>99</sup>**

# 888-447-3728

More than 4000 Macintosh products &amp; secure online ordering @

## www.macresq.com

Circle 191 on card or go to www.macworld.com/getinfo

## Save on Reconditioned Macs & Peripherals

### G3 POWERMACS

DT/233 32/4G/CD ..... \$479  
DT/266 32/4G/CD ..... \$499  
DT/300 32/4G/CD ..... \$549  
MT/266 32/6G/CD/AV ..... \$599  
MT/300 64/4G/CD/Zip ..... \$699

### POWERMACS

4400/200 32/2G/CD ..... \$199  
6100/60 16/250/CD ..... \$99  
7100/80 16/500/CD ..... \$129  
7200/75 16/500/CD ..... \$129  
7200/90 16/500/CD ..... \$149

7200/120 16/1G/CD ..... \$199

7300/180 32/2G/CD ..... \$279

7500/100 16/1G/CD ..... \$199

7600/120 16/1G/CD ..... \$219

7600/132 16/1G/CD ..... \$239

8100/80 16/500/CD ..... \$149

8500/120 32/1G/CD ..... \$199

8500/150 32/2G/CD ..... \$249

8600/200 32/2G/CD ..... \$399

9500/120 16/1G/CD ..... \$219

9500/132 32/2G/CD ..... \$279

9600/250 64/4G/CD ..... \$499

All CPUs include mouse

### MONITORS

14" Apple Trinitron ..... \$99

14" Apple MultiScan ..... \$79

15" Apple MultiScan ..... \$99

15" Apple MultiScan AV ..... \$129

17" Apple MultiScan ..... \$139

17" Apple 720 MultiScan ..... \$149

17" AppleVision 1710 ..... \$149

17" Apple ColorSync ..... \$179

20" Apple MultiScan ..... \$349

20" AppleVision 850 ..... \$399

### POWERBOOKS

180 8/120 ..... \$99

540 12/240 ..... \$149

540c 12/320 ..... \$199

5300cs 16/500 ..... \$249

5300c 16/500 ..... \$279

1400c/133 16/1G/CD ..... \$549

3400c/200 16/2G/CD ..... \$649

G3/233 32/2G/CD ..... \$949

G3/333 64/4G/CD ..... \$1399

6-Month Warranty

VISA &amp; MasterCard accepted

### TO ORDER CALL

**1-800-281-3661**

Or www.datatech-rmkt.com

## DataTech

REMARKETING, INC.

Tel: 615-860-4422

Fax: 615-860-0390

471 Myatt Dr., Madison, TN 37115

from DataTech Remarketing  
call 1-800-281-3661

macs for rent

Corporate names and trademarks are the property of their respective owners.



**WE BUY MACS AND MAC STUFF**  
**(318) 424-9791**

# SHREVE SYSTEMS

For all of this and more-check out our website!  
<http://www.shreveystems.com>



**WE STOCK MAC PARTS!**

**1-800-227-3971**

1200 Marshall st  
 Shreveport, LA 71037

## NEED PARTS? WE GOT 'EM!

**24X Internal Replacement  
 CD Drives-Trayload for iMacs**

**ONLY \$149**

**iMac DV's ON SALE!**

**Different Colors available!**

Factory Refurbished / 90Day Warranty

**AS LOW AS \$749**



**External  
 Firewire Drives**  
 20/30 GB available!  
**Starting at**

**\$149**

**USB Floppy Drives**  
**ONLY \$59**

Includes a box of 25 Mac formatted floppy disks-FREE!

**Internal 6X CD-Rom for  
 PB 3400 - NEW!**

**ONLY \$149**

**CALL**



**1-800-227-3971**

**StyleWriter 2400**

**ONLY \$99**

NO INK CARTRIDGES  
 INCLUDED!

**Power Supplies at  
 RIDICULOUS Prices!**



**PARTS BLOWOUT!**

**LaserWriter II NT**

**ONLY \$149**

Factory Refurbished



## Monitor Blowout!



**Apple 13" Trinitron RGB**  
 Factory Refurbished

**ONLY \$79!**



**PowerComputing  
 17" Monitor**

**ONLY \$149!**

Factory Refurbished



**Voxon 14" and  
 15" Monitors**

**AS LOW AS \$69!**

**NEW!**

See our line items below for other  
 monitor blowout specials!

**MacAlli Extended  
 Keyboard**



**NEW!**

**\$19**

**Genuine Apple  
 ADB Mouse II**



**\$49**

**Generic ADB  
 Mouse ONLY \$29**

**We also specialize in digital audio  
 recording! Call for the best prices  
 on Alesis, Akai, Tascam, Digidesign  
 and Mark of the Unicorn!**



**AKAI DPS 12 v2**

Now Includes a  
**FREE 2GB Hard  
 Drive!**

**AS  
 LOW  
 AS  
 \$699**

Check out our website at [www.shreveaudio.com](http://www.shreveaudio.com)



**ClarisWorks 4  
 Internet Edition**

**ONLY \$39!  
 NEW!**

### System Bundles SALE!

7100/60	5200/75	4400	5300/100	7300/200	PowerCurve 120	7200/75
24/350/CD/13" Monitor	8/500/CD/15" Monitor	32/2GB/CD	16/1GB/CD	32/2GB/CD	0/0/0/	0/0/0
<b>\$199</b>	<b>\$199</b>	<b>\$399</b>	<b>\$399</b>	<b>\$399</b>	<b>\$99</b>	<b>\$149</b>
refurbished	refurbished	refurbished	refurbished	refurbished	refurbished	refurbished

### PowerMac CPU SALE!

PRINTERS	MACINTOSH LOGIC BOARDS	MONITORS	NUBUS ADAPTERS
HP Deskjet 890 CM, <b>NEW</b> .....\$249	G3 logic board, No Processor, No ROM .....\$299.	Apple 14" A/V refurbished .....\$129.	Quadra 660AV NuBus Adapter .....\$49.
Apple StyleWriter 1200, .....\$129.	7200/90 logic board, refurbished .....\$149.	Apple 14" Multiscan, refurbished .....\$99.	Quadra 610 Nubus Adapter .....\$49.
Apple StyleWriter 1500, factory refurbished .....\$149.	LC logic board, refurbished .....\$49.	Apple 15" Multiscan, refurbished.....\$119	Ilisi Nubus adapter with math co-processor .....\$49.
Apple StyleWriter 2400, no cartridge, refurbished .....\$99.	LC II logic board, refurbished .....\$89.	Apple 15" AV, factory refurbished.....\$199.	
LaserWriter IInt, refurbished Toner not included .....\$149.	Mac LCIII logic board, refurbished, exchange .....\$99.	Apple MultiScan 17", refurbished.....\$179.	<b>VIDEO CARDS</b>
LaserWriter IIf w/5MB RAM, refurbished .....\$399.	Performa 630 logic board, No Processor, refurb .....\$49.	Apple 20" Multiscan, refurbished .....\$599.	E-Machines DoubleColor SX Nubus Card <b>NEW</b> .....\$29.
LaserWriter IIg w/5MB RAM, refurbished .....\$549.	Quadra 950 logic board, refurbished .....\$179	Radius IntelliColor/20e, factory refurbished .....\$999.	Diamond Javelin 3200 .....\$79.
Texas Instruments Micro Laser Pro E <b>NEW</b> .....\$449.	7100/66 logic board, refurbished .....\$99	Voxon 14" Multiscan <b>NEW</b> .....\$69.	*PowerMac HPV Card (1MB) .....\$79.
Laser toner cartridges sold separately	6200/75 logic board, refurbished .....\$99	Voxon 15" Multiscan <b>NEW</b> .....\$99.	*PowerMac A/V Card (2MB) .....\$99.
		Power Computing 15" refurbished .....\$119.	*Radius Precision Color 8/1600 .....\$79.
		Power Computing 17" refurbished .....\$149.	
IMAGING PRODUCTS	APPLE PC COMPATIBILITY CARDS		
Apple QuickTake 150 refurbished .....\$149.	Pentium 100-MHz, refurbished .....\$149.		
Apple QuickTake 100 refurbished .....\$99.	Pentium 166-MHz, 12" PCI card, refurbished .....\$199.		
	586 100-MHz, 7" PCI card, refurbished .....\$99.		
	486 66-Mhz for 6100 series, <b>NEW</b> .....\$29.		

**1-800-227-3971**

Prices reflect a 2% cash discount and are subject to change without notice. Returns are subject to a 15% restocking fee. Not responsible for typographical errors.

**[www.shreveystems.com](http://www.shreveystems.com)**





# SUPERIOR Products for Your POWERBOOK

www.mcetech.com

## Xcarét Pro Expansion Bay CDRW Drives

- Bootable! • Hot Swappable • Fast Backup or File Transfer
- Toast™ Recording Software • Protective MCE Carrying Case
- Available for PowerBook G3 98 (Wall Street) or PowerBook G3 99 & 2000 (Lombard & Pismo)

iTunes and Disc Burner Compatible!

**\$379**



## Xcarét Pro Expansion Bay Hard Drives

- Ultra Fast! • Hot Swappable • Bootable • Compact
- Protective MCE Carrying Case
- Available for PowerBook G3 98 or PowerBook G3 99 & 2000

multimedia tuned  
**30GB 20GB 10GB**  
150 min.\* 100 min.\* 50 min.\*  
**\$549 \$449 \$349**

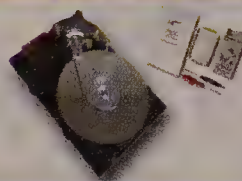
Do it Yourself Kit  
**\$149**

Turn your old internal PowerBook drive into an expansion bay drive!



GREAT for Video Editing

## Internal Hard Drive Upgrades for PowerBooks



- The BEST Internal Hard Drive Upgrade Kits for your PowerBook!
- Package includes hard drives from the same manufacturers that shipped in the PowerBook from the factory, bundled with everything you need for a successful installation\*
- For use in PB G4, PB 2000, iBook, PB G3 Series, G3, 3400, 2400 & 1400\*

**10GB 20GB 30GB**  
**\$199 \$299 \$399**

## NEW! Transport Portable Hard Drives

- Sleek Mini FireWire Hard Drives with Optional PC Card Connectivity
- Use the Transport Drive Do-It-Yourself FireWire or PC Card Kit to Convert Your old Internal Drive into a Portable Drive!



**30GB 20GB 10GB**  
**\$549 \$399 \$299**

Do it Yourself FireWire Kit  
**\$149**  
Do it Yourself PC Card Kit  
**\$99**



## USB FlexLight

"Illuminate Your Workspace"



- Conveniently lights up your keyboard and surrounding paperwork
- Twists and Bends so You can Direct the Light Where You Want it
- Comes with Both a Clear and a Red Diffuser - You Choose the Type of Light to Suit Your Situation
- Powered by the USB Port • Very Low Power Draw

**\$24.99**

MCE  
Mac Components Engineered



Distributed by:  
INGRAM MICRO

For more info:  
**www.mcetech.com**

800.500.0622  
949.458.0880

Contact us for a dealer near you.

\* See website for details

# www.powerbook1.com

secure online ordering

## CardBus Upgrade Service

opens up the possibilities for USB, FireWire, 10/100 Ethernet, expanded Video

for PB 2400 & 3400/G3  
See website for details!

### WORLD'S SMALLEST POWERBOOK AC ADAPTERS!

FOR PB G3 MODELS, iBook, 3400, 2400, 1400 & 2300  
AND NOW ONE FOR THE PB G4 TITANIUM!



Micro-AC Adapter  
only **\$85**  
Save space and weight in your carrying case!!

Auto/Air Adapter  
Charge your PowerBook in the car or airplane  
**\$80**  
**BUNDLE DEAL!**  
Micro-AC Adapter & Auto/Air Adapter  
**\$150**

## MADSONLINE

G3 to G4 Generation Gap AC Adapter Converter

**\$20** Carrying Cases

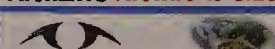
Slimline Case...\$99  
Productivity Case...\$139  
G4 Saver Neoprene Carry Case for PB G4 \$59



Expansion Bay Zip Drives  
100MB starting at \$199  
250MB \$279  
Charger, Battery & AC Adapter Bundle  
**\$285**

## RATOC Systems

CBFW2 CardBus-to-FireWire Adapter \$129  
CB31PB CardBus-to-Ultra SCSI Adapter \$129  
FireREX1U FireWire-to-UltraSCSI Converter \$119



CapSure PC Card Composite or S-Video Input \$99  
CapSure USB Composite or S-Video Input Built-in Microphone \$119  
CapSure/Kritter SV BUNDLE DEAL \$229  
Kritter USB Camera \$99  
Kritter USB Camera \$129  
Kritter SV Camera \$139

## Titanium PowerBook G4

**\$2599**

- 400MHz G4
- 128MB SDRAM memory
- 10GB Ultra ATA drive
- DVD-ROM • 10/100 Ethernet
- 56K internal modem
- 2 USB ports • FireWire port

+ FREE 128MB RAM

- 500MHz G4
- 256MB SDRAM memory
- 20GB Ultra ATA drive
- DVD-ROM • 10/100 Ethernet
- 56K internal modem
- 2 USB ports • FireWire port

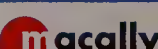


+ FREE 256MB RAM

**\$3499**

Call for Custom Configurations & Bundle Deals!

\* While supplies last. \$30 installation fee



iOpti Jr.  
Compact USB Optical Mouse  
**\$35**



**\$39**

CardBus-to-USB Adapter  
**\$79**



**\$69**

## PRO AUDIO EQUIPMENT FOR POWERBOOKS



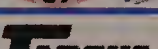
VXpocket  
Professional ANALOG AND DIGITAL audio interface for your PowerBook!

**\$599**



Lightweight USB-2-Midi Interface

**\$99**



Top Loading Notepad  
**\$49**

Backpack Carrying Case  
**\$59**

4-Port Mini USB Hub  
**\$49**

World Travel Connection Kit  
**\$79**



MCE XBay Expansion Bay Device Carrying Case  
Convenient protection for expensive bay devices!  
**\$19**

Klear Screen iKlear  
PowerBook Screen Cleaner  
12-pack  
**\$9.99**



PowerBook & iBook Memory Upgrades!!  
See our web site for latest pricing!!

G3 Processor Upgrades for your PowerBook 1400 & G3 Wall Street  
SIMPLY FAST  
PowerLogix

Apple Computer  
PowerBook 2400 Battery \$249  
PowerBook G3 99/2000 Battery \$139

30 Hughes Suite 203 • Irvine, CA • 92618  
Visa / MC / AmEx / Discover / P.O.

1-800-5000-MAC • 949-458-0800 • fax 949-458-1803

6 2 2



# CALL THE MAC EXPERTS!

Your one-stop source for Apple® Macintosh® - over 40,000 items on sale at better than mail order prices!  
It's pretty simple: we know a lot about Mac® stuff, and we care about our customers.



**G4/450 w/128  
RAM, 20 Gb  
HD, DVD-ROM,  
Zip drive, 56k**  
**\$1399**



**G4/500 w/256  
RAM, 27 Gb HD,  
DVD-ROM, Zip**  
**\$1788**

**Sage & Ruby iMacs™**  
in stock for only **\$1088!**  
450 MHz 64/50/DVD



**Graphite iBook™**  
**G3/466 64/10/DVD**  
**\$1469**



**G4/450 Cube  
w/64 RAM, 20  
Gb HD, DVD-  
ROM**  
**\$1099**



**PowerBook®**  
**G3/400 w/256  
RAM, 10/DVD/56k**  
**\$1979**

iBooks™ starting at  
**\$929!**



**Factory  
Refurbished  
Specials**



Mad Max  
says: "If  
you can  
find a larger  
selection of  
Macs any-  
where, I'll  
eat my  
hat!"

## "PowerMax-imum" Bundle Deals

### Dual G4 w/ gorgeous 22" Cinema

G4/533 Dual w/ 128 mb RAM,  
40 Gb drive, CD-RW drive,  
56k Modem and a 22"  
Apple Cinema display.



**\$4999**

### iMac™ w/extra RAM & scanner

Indigo 450 iMac™ w/ 128 mb  
RAM, 20 Gb drive, DVD-ROM  
and a factory refurbished  
Umax USB scanner.



**\$1149**

Factory Refurbished w/ factory 90 day warranty

## Beige G3 Blowout!

G3/233 DT 32MB/4GB/CD/KB	\$619
G3/266 MT 32/0/CD/0 KB	\$619
G3/233 DT 64MB/4GB/CD/KB	\$639
G3/266 DT 32MB/4GB/CD/Zip/KB	\$679
G3/266 DT 64MB/4GB/CD/Zip/KB	\$697
G3/266 DT 32MB/6GB/CD/Zip/0 KB	\$795
G3/266 DT 64MB/4GB/DVD/KB	\$799
G3/266 MT 32MB/6GB/CD/Zip/KB	\$799
G3/266 MT 64MB/6GB/CD/Zip/KB	\$809
G3/266 DT 96MB/4GB/CD/0 KB	\$819
G3/266 MT 96MB/6GB/CD/Zip/KB	\$824
G3/266 MT 128MB/6GB/CD/Zip/KB	\$839
G3/300 DT 64MB/6GB/CD/Zip/KB	\$899
G3/333 MT 32MB/2GB/CD/KB	\$979
G3/400 DT 128/6/CD/USB/56k/KB/51.49	\$149

## 9500's on sale!

9500/132 BMB/2GB/CD/KB	\$305
9500/132 32MB/2GB/CD/KB	\$337
9500/120 BOMB/1GB/CD/KB	\$338
9500/132 80MB/1GB/CD	\$349
9500/132 48MB/2GB/CD/KB	\$357
9500/132 80MB/1GB/CD	\$361
9500/132 96MB/1GB/CD	\$372
9500/180MP 64MB 1GB/CD/KB	\$372
9500/132 64MB/2GB/CD	\$378
9500/132 120MB/1GB/CD	\$399
9500/200 96MB/1GB/CD	\$421
9500/132 136MB/1GB/CD	\$422
9500/200 64MB/2GB/CD	\$427
9500/200 112MB/2GB/CD	\$459
9500/132 128MB/4GB/CD	\$494

## Pre-Owned Macs at Lower-Than-Ever Prices!

We load 'em with RAM & Guarantee 'em! Great price/performance!

Models, fully configured ...Starting At	7300 series.....\$349	9600 series.....\$649
6100 series.....\$99	PowerTower Pro Towers.....\$349	9650 WorkGroup Server.....\$799
6400 series.....\$219	Umax S900 Towers.....\$388	Blue & White G3 Towers.....\$949
7500 series.....\$249	PowerBook® 5300C series.....\$429	iBooks™.....\$949
7600 series.....\$289	PowerBook® 3400C series.....\$499	PowerBook® G3's.....\$999
8500 series.....\$289	iMac™ 266 32/6/CD.....\$569	G4 Graphite Towers.....\$999
9500 series.....\$305	8600/300.....\$649	G4 Cubes.....\$1049

## WWW.POWERMAX.COM

- Daily specials & blowouts
- New, Used & Refurbed
- Download software
- Bargain Basement Deals
- Digital video packages
- updates & spec sheets
- Plus Macintosh news from around the world updated daily!

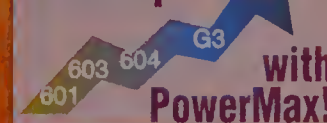


4x8 SCSI CD-R*	\$99
Internal 9 Gb SCSI Medalist*	\$199
40Gb USB Hard Drive	\$219
FireWire CD-RW 12x10x32x	\$299
10Gb FireWire & USB Pocket	\$319
60Gb FireWire Drive	\$348
Electron19blue II Display	\$599
Electron22blue II Display*	\$949
Over 100 other Lacie items on sale!	

\*Factory refurbished by Mgr

**Why PowerMax?** • Hundreds of Mac models to choose from  
• Knowledgeable, non-pushy salespeople • Great tech support  
• No voice mail (during office hours) • We consult on all Mac  
hardware & software • no rebate games or hidden charges

## TradeUp



We'll take your Mac OS computer in trade toward the purchase of new product. Call one of our expert Mac consultants for full details!



Knowledge is Power

# 800-613-2072

Local: (503) 624-1827 • Fax (503) 624-1635  
email: [sales@powermax.com](mailto:sales@powermax.com)

Prices subject to change without notice. Prices reflect cash discount. Credit card orders strictly verified against fraudulent use. Use of credit card as payment customer acknowledges that some products are subject to final sale. Many prices are limited to stock on hand. All brand or product names are registered trademarks of their respective holders.

• Personal Financing • Fast P.O. Approvals • Business Leasing • Weekly specials on our web site • Order on line or call one of our experts!

G4s & Cubes

DV iMacs™

iBooks™

PowerBooks®

Blue & White G3's

Beige G3's

Software

## Maybe its time to consider a User Group!



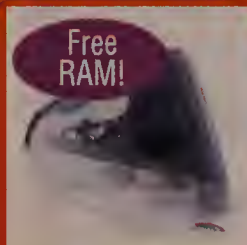
**733 MHz  
Deals!**



**Huge  
Selection!**



**New &  
Refurb!**



**Free  
RAM!**



**Unique  
Deals!**



**The  
Latest  
Stuff!**

Macintosh User Group members enjoy access to a very special Apple-sponsored web site featuring super deals on the latest Apple products as well as factory refurbished and discontinued Macs, and much more! Not a member? Find out how you can get these great deals by calling PowerMax at **800-689-8191**.



Apple Specialist

# [www.applemugstore.com](http://www.applemugstore.com)



Authorized Reseller

The MUG Store. A cooperative venture between Apple and PowerMax to bring MUG members exclusive deals on the latest Mac® products and special offers on discontinued and factory refurbished computers.

PowerMax is a division of Computer Sales & Software, Inc.



**800-673-MACS**

916-677-6227

fax 916-677-6228

800-673-6227

WE SHIP ANYWHERE IN THE WORLD CHECK OUT OUR WEEKLY WEB SPECIALS <http://www.poweron.com>

**PowerMac 5260**

24MB RAM • 1GB HD • CDROM  
ETHERNET • Floppy Drive  
Keyboard • Mouse  
Built-in Color Monitor

**\$149<sup>99</sup>**



**COMPLETE LAB PACKS**

Includes: Computers, Monitors,  
Ethernet Cards, Cables,  
Hubs, and Network Printers

**10 station lab \$1,999**

**PowerMac 6360**

Includes:  
**14" Color Monitor  
& ETHERNET Card**



**\$189<sup>99</sup>**

Educational Pricing Available

603e / 160 Mhz  
16MB RAM  
1.2GB Hard Drive  
8x CDROM Drive  
1.44 Floppy Drive  
2 PCI Slots  
Keyboard • Mouse

**Apple Compatible  
HARD DRIVES**

Includes FREE  
Hard Drive Utilities

**9GB** 3.5" x 1.6" **\$129<sup>99</sup>**  
SCSI 50 pin

**4GB** 3.5" x 1.6" **\$89<sup>99</sup>**  
SCSI 50 pin

**2GB** 3.5" x 1" **\$69<sup>99</sup>**  
SCSI WIDE  
w/50 pin

**MONITOR DEALS**

Apple 14" Multiscan  
Built-In Speakers

**\$59<sup>99</sup>**

Apple 17" Multiscan  
Trinitron Tube

**\$129<sup>99</sup>**

Apple 20" Multiscan  
Trinitron Tube

**\$329<sup>99</sup>**

WOW 21" Multiscan  
Viewsonic G810

**\$349<sup>99</sup>**

**Dual Monitor Video Card**

**\$99<sup>99</sup>** PCI Interface  
1920x1200 max  
128 bit 2D/3D  
Twin Turbo

**Apple Compatible  
MODEMS**

**56k v.90  
External \$69<sup>99</sup>**

PCMCIA 28.8/33.6bps modem **\$29<sup>99</sup>**

PCMCIA 28.8/10BT Ethernet **\$89<sup>99</sup>**

PCMCIA 56k v.90 modem **\$89<sup>99</sup>**

WE SELL...  
ETHERNET for DSL/CABLE MODEMS

**CDROM DEALS**

**12x 1800i  
SCSI \$79<sup>99</sup>**

External SCSI CDROM Cases (N) . 39.99  
4x Apple SCSI CDROM ..... 39.99  
8x Apple SCSI CDROM ..... 59.99  
12x Apple SCSI CDROM ..... 79.99  
24x Apple SCSI CDROM ..... 129.99  
24x iMAC CDROM-Tray loading ..... 99.99  
24x iMAC CDROM-Slot loading ..... 99.99  
4x iMAC DVD ROM-Slot loading . 129.99  
24x Apple ATAPI CDROM ..... 79.99  
32x Apple ATAPI CDROM ..... 99.99  
6x Apple DVD ROM ATAPI ..... 169.99  
CDROM Installation Kits.....IN STOCK

**PRINTER DEALS**

**Apple LW  
16/600PS**

SERIAL & ETHERNET  
Laser Printer

**600 dpi  
17 ppm \$399<sup>99</sup>**

LW 16/600 Toner only \$49 w/purchase

CANON BJC2100 USB **\$54<sup>99</sup>**

HP 1600CM SERIAL & ETHERNET **\$129<sup>99</sup>**

EPSON 850NE SERIAL & ETHERNET **\$179<sup>99</sup>**

Refurbished (Toner w/some models, CALL for details)

INK CARTRIDGES & TONER

1000's Available  
See Our Web Catalog

**Mac OS 8.5 CD**

FREE WEB UPGRADE TO 8.6

**\$79<sup>99</sup>**

OEM/FULL INSTALL

**Mac OS 7.6 CD \$39<sup>99</sup>**

OEM/FULL INSTALL

**Mac OS 8.0 CD \$49<sup>99</sup>**

OEM/FULL INSTALL

**ORIGINAL PARTS**

Macs, PowerComputing,  
UMAX, Motorola

**www.poweron.com**

sales@poweron.com

Check Out Our Complete Inventory Online



Business Offices  
8801 Washington Blvd.  
STE. 101  
Roseville, CA. 95678

**PowerON**

Computer Services

Gov't & School PO's Accepted  
CALL for EDUCATIONAL Quotes

Mon-Fri 7-6<sup>PST</sup>, Sat 10-5<sup>PST</sup>

All Prices include 3% cash discount. All items are Used or Refurbished unless otherwise indicated. ALL SALES FINAL.  
90 day PowerON warranty. Mfr warranty may be available on certain items. Call for details

**WHY IS THE COMPETITION  
SHAKING?**

**BECAUSE  
1-800-4-MEMORY  
IS HERE**

**WE CAN BEAT**

**ANY QUOTED PRICE ON ANY  
MEMORY FOR ANY COMPUTER  
(NOTEBOOK, DESKTOP,  
PRINTERS) ANYWHERE ...  
PERIOD!**

- LIFETIME WARRANTY
- FREE TECH SUPPORT
- NO CREDIT CARD SURCHARGE
- MOST ORDERS SHIPPED SAME DAY

**CALL AROUND  
THEN CALL US**

CHECK OUR WEB SITE FOR SPECIALS  
**WWW.18004MEMORY.COM**

**MEMORY**

**LOWEST WEB PRICES!**

Upgrade Today. It's Easy!

MEMORY mb	16	32	64	128	256	512	SPECIALS!!
G3/G4	-	\$18	\$22	\$37	\$72	\$168	Mac OS 8.1 CD only \$39
PowerBook G4	-	-	-	\$43	\$95	\$329	Mac OS 8.6 w/Free 8.5 CD 69
PowerBook G3	-	\$18	\$23	\$37	\$85	\$168	Mac OS 9 79
iMac 350-600	-	\$18	\$22	\$37	\$72	\$168	Global Village 56k serial modem 69
iMac 233-333	-	\$18	\$23	\$37	\$85	-	
iBook™	-	\$18	\$26	\$48	\$88	-	
168 pin DIMMs	\$19	\$32	\$57	\$118	-	-	
72 pin SIMMs	\$15	\$37	\$76	-	-	-	

Note: The memory market is extremely volatile. All prices are subject to change without notice. Current Web prices listed at print deadline. Not responsible for typographic errors. Limited to stock on hand.

**WE BUY USED MACHINES - 604/G3/G4**

Apple Authorized Reseller Apple Specialist Apple Authorized Service Provider

MacSolutions, Inc. Fax: (310) 966-4433  
11933 Wilshire Blvd, West Los Angeles, CA 90025  
University & School P.O.'s Welcome. Ad code 416

**MAC  
Solutions**

Call 800-873-3RAM or Order Online at  
**www.macsolutions.com**



continued from page 136

Chewbacca. But my dilemma illustrates both the importance of the handheld computer and the inelegance of current offerings.

The Newton was ahead of its time. We're just now at the leading edge of the major cultural shift it anticipated: year after year, we're getting closer to the day when the majority of the adult population is made up of people who grew up with computers. The handheld computer is merely a thriving market space today, but before long those things are gonna be like underpants: unless you're participating in an activity that offers a distinct advantage to nudists, not having 'em on your person marks you as an exceedingly odd individual. In this new world, a company without a serious presence in the pocket-dooickey realm is a company behind the eight ball.

For now, Apple's sole presence in that enormous market space is, well, Palm's support for Mac OS. It just seems wrong. If Palm is fulfilling every Mac user's expectations of a Mac handheld, why do cities burn every time there's a new rumor of an—*Ask for it by name!*—Apple Consumer Pocket Electronic Dooickey? We all want Apple to get back into the handheld world, and not just because we're so hard-core that we bleed green, yellow, orange, red, purple, and blue. We want it because it's an opportunity for Apple to do what it's great at. It's *good* at making iMacs in wacky colors, but it's *great* at making, say, the first totally amphibious Web server, or a notebook that doubles as a pop-up opera hat. Apple is the only company both eager and able to present truly fresh damn-the-torpedoes ideas.

The thought of Apple getting back into the handheld game is tantalizing even if you believe that Apple should stay out of the handheld-hardware business altogether. Imagine Apple creating new connectivity software that allowed the Mac to work far more intimately with a Palm device than any Windows machine could, for starters.

After your third or fourth beer, it may even occur to you that the iPaq uses the StrongARM processor—the same one powering the next-generation Palms—and that both handhelds will have flashable ROMs, so their original operating systems can be wiped and replaced with something better, written by a company that's good at spotting and eliminating the most cumbersome aspects of the status quo.

If you keep drinking until your friends, ignoring your seemingly incoherent mumblings, trick you out of your car keys and put you to bed on the nearest sofa, you might drift off to sleep remembering that, hey, you know, Apple still *owns* the Newton OS. And wasn't it written for the StrongARM processor? What if Apple . . . grrzzzzzzzzzz. **m**

ANDY IHNATKO has written about the Mac for years, and yes, he does own a holster for his Newton.

**MEGAMACS.COM**

iMacs/iBooks/G3/G4 (preowned) from \$599  
 NetBarrier/NortonAntivirus6/Utils4 \$24/14/9  
 Logitech SoundmanX2 Speakers \$49  
 Office 4.2 / 98 / 2001 \$59/199/399  
 Epson850NE(network)/Photo 700 \$149/109  
 OmniPage7.0/OS 8.5 \$39/69  
 ADBMice/Keyboards/QuikCamVC \$12/15/29  
 GlobalVillage 56k Fax Modems from \$39  
 FUJI 100MB ZIP 3pk (after mfr rebate) \$24  
 IBM 15 inch Flat Panel Pivot Monitor \$699  
 Business PlanToolkit V7/WebSavant \$49/69  
 Apple 17inMonitor/LWPRO 630 \$105/249  
 RicohCDRW/Apple4X/8XCD \$149/19/49  
 RayDreamStudio5.5orTimbuktu \$59  
 Ram Doubler9/ConflictCatcher 8 \$24/59

Get FREE software with orders placed on our website  
**918-664-MACS** (6227) **MACS!**  
 fax: 918-663-6340 Price rounded down, credit cards ok

**1one memory.com**

**LIFETIME WARRANTY**  
**BEST QUALITY**  
**SECURE**  
**FAST • EASY**

**PC100**  
 128mb '96  
 256mb '70

**PowerBook G4**  
 128mb '41  
 256mb '93

sales@onememory.com  
**www.onememory.com**

**MEMORY**

**DATA MEMORY SYSTEMS - CALL 800-662-7466**

**Lifetime Memory Guarantee - 30 Day Money Back**

AC Adapters  
 Batteries  
 Cables  
 Camera Memory  
 DIMMs  
 MacCPU Upgrades  
 Iomega Stuff  
 Modems  
 Monitors  
 Networking  
 PowerBook Memory  
 Printer Memory  
 SDRAM  
 SIMMs  
 Storage Drives  
 Surge  
 Suppressors

**Memory**

- ✓ PC66 SDRAM
- ✓ PC100 CL2/CL3
- ✓ PC133 SDRAM
- ✓ ECC & EDO

**Networking**

- Client/Server Systems
- Ethernet Cards & Conns.
- Hubs
- CAT5 Cabling

**DMS has all you need to network your business**

**Since 1986, DMS has provided customers with the best memory prices, guarantee and service anywhere!**

**Nothing has changed...**

Secure Online Shopping  
**www.datamem.com**

**DMS**  
 DATA MEMORY SYSTEMS  
 24 Keewaydin Dr.  
 Salem, NH 03079  
 Fax: 603-898-6585

Circle 213 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)

## Classifieds

**POWERBOOK GUY** - The premier source for powerbooks, parts, & accessories!  
[www.powerbookguy.com](http://www.powerbookguy.com) (415) 386-0200

**Macintosh web hosting & QuickTime streaming** - Host your site on secure Mac servers - Publish your FileMaker database on the web - Access like an iDisk! - Stream QT Movies - Plans start @ \$100/year w/50MB of space.  
[www.macserve.net](http://www.macserve.net)

**ROLL CALL CHURCH MANAGEMENT SOFTWARE, ONLINE BIBLE** BY THE BOOK  
[www.bythebook.com](http://www.bythebook.com) or dial (800) 554-9116

For more information, contact Niki Stranz at 415-243-3664 or Carol Johnstone at 415-243-3691



A NEW POCKET COMPUTING device is coming from Apple. If the company isn't planning to release one soon, then it already has some prototypes built and working as proof-of-concepts. Or it's aggressively white-boarding basic ideas on what sort of handheld it hopes to make someday. At least, it refuses to confirm or deny that it might possibly release one eventually. If you don't believe that, maybe this one will work for you: a year or two ago when Steve Jobs modified the tic-tac-toe diagram he uses to represent Apple's hardware strategy, he left a square tantalizingly blank, so there's every reason to—

Oh, who the hell am I fooling? For all we know, Jobs could have intentionally left that space blank for tax purposes. At the moment, the most realistic analysis is that Apple's next handheld will be a flop because the hyperintelligent supermonkeys who will probably rule the planet by then will lack the opposable thumbs and the fine motor skills required to operate a stylus.

Yet folks are still hot for Apple to reinterpret the personal digital assistant for this millennium—perhaps against all logic. But Palm owns the bloody category. It's got a great product that's only getting greater, and even Microsoft is having a hard time convincing people otherwise.

### Out Apple-ing Apple

Palm is probably the only company other than Apple ever to design a computer that goes beyond simply being usable to actually being *likable*. Even the very first Palm Pilot had personality and identity, and gave you the impression that it was the result of a philosophy, not of a business plan. Palm seemed to grasp (and it still does) that the development of computer hardware and software is a *creative* endeavor—no less than a great book, movie, or album is—and that the price of endless focus-grouping and market analysis is mediocrity.

Maybe the folks at Apple took that principle to the extreme with the Newton. If they had done a little more

ANDY IHNATKO

# Newton's Ghost

*Sure, the Palm*

*Is Great.*

*But I Want an  
Apple Handheld!*



analysis before building 'em, perhaps they would have discovered that the only way users can fit Newton into convenient pockets is if they first borrow old leisure suits from their dads. But the Newton OS remains the gold standard in handheld operating systems. The Palm OS is at first forgivably clunky and then endearingly so. But when you put a Palm next to the manifestly elegant and powerful aura of a Newton, you're left wondering why no one's making anything that can approach it, even today.

You think I'm kidding? Years after the Newton was discontinued—and after I finally determined that I was expending more calories keeping my Newton working with incompatible hardware and software than its developers had spent designing it—it still takes no fewer than three items to spackle the hole

my Apple MessagePad 2100 left behind.

My Palm is the best thing for managing contacts and appointments, has the best library of mobile apps and games, and has the most elegant operating system. My Compaq iPaq runs PocketPC, which is the

first version of Windows CE that inspires me to write about it calmly instead of causing me to jump up and down, gesture wildly, and shriek incoherently,

as you might behave after a car turned right without signaling and knocked you off your bicycle. It's the best handheld computer for working with large quantities of desktop data (databases, documents, sound, and graphics). And for the most important function of my Newton, I'm back to using a pocket sketchbook. No other pen-based handheld computer is worth a shaved elk hoof if you need to jot down notes longer than a sentence or two.

### Generation Handheld

Maybe I'm not a typical user. I mean, I actually enjoy the serene knowledge that in any room, I'm the person carrying the most microprocessors, even if it means wearing them all on a bandolier across my chest like

*continues on page 135*





Adobe® PostScript® 3™

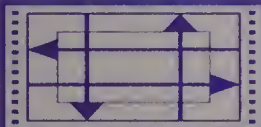
**X-ACT**  
accurate measurements



high performance



halftone calibration



gripper offset

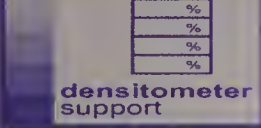


duplexing

CONTINUOUS TONE QUALITY



LINE PER INCH



densitometer support



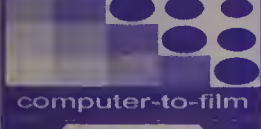
POSITIVE FILM TECHNOLOGY



computer-to-plate



NEGATIVE ENHANCED IMAGING TECHNOLOGY



computer-to-film



# Take a look at our Portfolio!

Photo Quality Color Printing

Graphics Printing

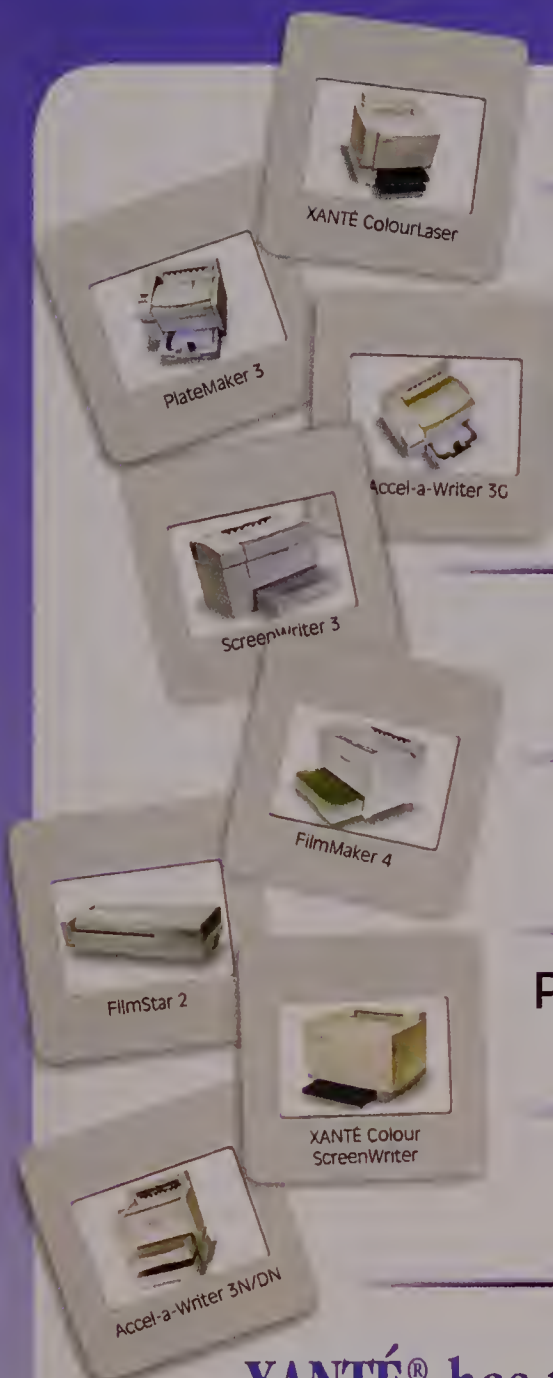
Computer-to-Plate

Computer-to-Film

Desktop Film Processing

Positive Film Systems & Heat Transfers  
for Screen Printing

Office, Network Printing



## XANTÉ® has the solution to all your printing needs!

From general office use to color and prepress systems, XANTÉ has the qualified choice to fill your printing demands. Among our achievements is state-of-the-art technology with up to 2400 x 2400 dpi, continuous tone color with up to 175 lpi, desktop positive and negative film capabilities, oversized printing up to 13" x 35.5", and much more. XANTÉ printing systems offer the highest quality, performance, and flexibility available on the market today.

Call now for complete information and actual output samples,

**800-926-8839 ext. 2168 or Fax 334-473-6503**

or visit:

[www.xante.com/mw7](http://www.xante.com/mw7)

Myriad 2 Plates by AGFA  
**AGFA**  
AGFA and the Agfa rhomb are  
trademarks of Agfa-Gevaert AG.



 **XANTÉ**  
Innovations in Printing Technology

© 2001 XANTÉ CORPORATION. XANTÉ, Accel-a-Writer, ScreenWriter, FilmStar, ColourLaser, and X-ACT are trademarks or registered trademarks of XANTÉ CORPORATION. Adobe, PostScript, PostScript 3 and the PostScript logo are trademarks of Adobe Systems Incorporated. Other brands and product names are trademarks or registered trademarks of their respective holders. XANTÉ CORPORATION: Post Office Box 16526, Mobile, AL 36616-0526, USA, Tel. 334-473-6502, Fax: 334-473-6503, [www.xante.com](http://www.xante.com)

Circle 113 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)





# Meet the new Mac OS.

Thinking of upgrading your operating system? Start with the new Turbo Mouse® Pro trackball. It's a USB-ready operating system in its own right—with all the professional features you need to guide you through Mac® OS X in comfort and style. Its six DirectLaunch™ buttons launch apps and transport you to your favorite web sites instantly. Four programmable buttons reduce repetitive tasks to a single productive click. An integrated scroll wheel races effortlessly through even the largest documents. All while you're pampered by the silky-smooth precision of steel bearings and an extra large ball. Check out the Turbo Mouse Pro—the perfect touch for any Mac. Visit your nearest Kensington dealer or [www.turbomousepro.com](http://www.turbomousepro.com).

**KENSINGTON®**

Smart design at work.

Kensington and Turbo Mouse are registered trademarks of ACCO World Corporation. Mac is a registered trademark of Apple Computer, Inc. All other registered and unregistered trademarks are the property of their respective owners. ©2001 Kensington Technology Group, a division of ACCO Brands, Inc.

Circle 1 on card or go to [www.macworld.com/getinfo](http://www.macworld.com/getinfo)